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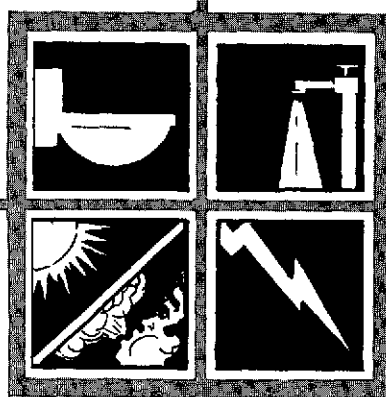
AND LEGAL CONSTRAINTS IN IMPLEMENTING MODULAR INTEGRATED UTILITY SYSTEMS Final

Report, Dec. 1973. - Dec. 1974 (Texas

Southern Univ.) 250 p HC \$7.50

Unclass

CSCCL 05K G3/85 06648

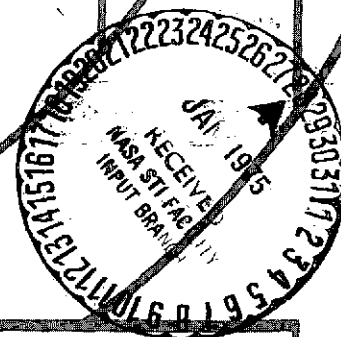


Social Cost Considerations And Legal Constraints In Implementing

Legal Constraints In Implementing

MODULAR INTEGRATED UTILITY SYSTEMS

UTILITY SYSTEMS



Texas Southern University
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Houston, Texas 77004

SOCIAL COST CONSIDERATIONS AND
LEGAL CONSTRAINTS IN IMPLEMENTING
MODULAR INTEGRATED UTILITY SYSTEMS

Final Report, covering the period

December 1973 - December 1974

NGR 44-016-016

by

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with

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SOCIAL COST CONSIDERATIONS
IN IMPLEMENTING
MODULAR INTEGRATED
UTILITY SYSTEM

Preparation of Report
by
Naomi W. Ledé

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ACKNOWLEDGMENT

As chief writer of the report, I am under heavy obligation to many persons who provided time and support, good judgment and expertise, helpful suggestions, source materials, encouragement and personal kindness during the course of the study.

The study was made possible through a subcontractual grant from the Lyndon B. Johnson Space Center, Houston, Texas. The first project supervisor from the Johnson Space Center was Spencer Gardner. Continuation of this supervision was carried on by George Crittendon of JSC. Both of these individuals provided us with invaluable assistance during the initial launching of the project and for the critical periods involving data collection and analysis.

My gratitude to those who collaborated in the preparation, execution, and analysis of the survey data cannot be fully expressed. It affords me a great deal of pleasure to mention the collaboration of Dr. Paul N. Geisel, Institute of Urban and Regional Studies, University of Texas at

Arlington and Dr. Anthony J. Mumphrey, Jr., associate professor of Urban Studies, University of New Orleans (formerly LSU). These consultants made many trips to the Urban Resources Center for planning, developing survey instruments, the pilot testing; for consultations on data collection, tabulation, analysis, and interpretation. Dr. Hortense W. Dixon, Vice President for Urban Programming in Texas Southern University, gave her complete support to the project and supervised all phases of the project. Her helpful suggestions provided impetus to our efforts when we encountered administrative problems.

The staff members of the Division of Research of the Urban Resources Center performed a variety of tasks, including interviewing, research assistance in locating illustrative materials, coding, programming of data, and assistance in the preparation of all tabular presentations. This work was done untiringly and discerningly. Claudia Abernethy, Herbert Fain, Gwendolyn Bookman, Samuel McCloud, Linda Brown, Raymond Fisher, and Maynard Daffin served as interviewers for the study. Kathryn A. Goode, as Special Projects Planner, assisted in the general administration of the study, made all contacts for field enumeration, provided

research assistance in reviewing previous literature on the subject, supervised and typed all drafts of the manuscript. Alicia H. Mathis provided assistance in data processing and edited all drafts of the report. Linda E. Brown and Gwendolyn Bookman coded and programmed the data; provided assistance in data analysis and interpretation. They were assisted in these tasks by Drs. Delbert A. Taebel and Paul N. Geisel, special consultants from the University of Texas at Arlington. Linda Brown typed all drafts of the legal manuscript.

The bulk of the research on "Legal Considerations and Related Constraints" included in the study was completed by Mary A. Daffin, a graduating student in the Texas Southern University School of Law. She is primarily responsible for the completion of this phase of the study; while Joe A. Bookman completed many of the graphic illustrations and the cover design for the study. Special permission was received from the Macmillan Company for some of the attitudinal scales found in the survey instrument.

It is my hope that the worth of the many contributions to the study is reflected in the quality of the suggestions and recommendations given relative to social cost consideration, legal constraints, and the overall implementation

of the MIUS concept. I accept full responsibility for the ideas presented, any errors or criticisms concerning the report.

Urban Resources Center
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SUMMARY, IMPLICATIONS,
AND GUIDELINES FOR POLICY

SUMMARY, IMPLICATIONS, AND GUIDELINES FOR POLICY

This study considers social costs associated with the design, demonstration, and implementation of the Modular Integrated Utility System. In particular, it considers the social climate of communities, leadership patterns, conflicts and cleavages, specific developmental values, MIUS utility goal assessment, and the suitability of certain alternative options for use in a program of implementation. Finally, it discusses some general considerations in the field of socio-technological planning. These include guidelines for understanding the conflict and diversity; some relevant goal choices and ideas useful to planners of the MIUS facility.

Summary of Findings and Implications

Some of the relevant findings of the study are listed below:

- General

Citizens of the various communities were committed to innovative change, participation and economic

development. In examining certain developmental values, we found that on the average there was a high commitment to conflict-avoidance. Citizens in the garden-type apartment communities were not action-prone. In relation to implementation of the MIUS facility, this kind of climate would reduce the likelihood of protests, thereby reducing some social costs associated with implementation.

A comparison of average scores on the six developmental values (part of what was termed "The Social Matrix for Development") between Denver-Laurel citizens and Houston citizens, indicated a degree of variation in value commitments to such issues as conflict-avoidance and participation. Commitment to conflict-avoidance was greater among Denver-Laurel citizens than those of Houston; while the strongest commitment to participation in decision-making was found among Houston citizens.

Eight possible sources of division in communities were examined. Differences in education, income, religious belief or affiliation, political views; differences between city and country (urban versus rural or suburban); between managers and employees; differences in social and racial origins; and differences between those desiring social change and those opposing it were explored. With respect to these cleavages, we found little division evident in all communities. This lack of perceived conflict or cleavage would, again, reduce the tendency toward activeness in similar communities if chosen for the MIUS demonstration and implementation. It should be noted, however, that this finding does not discount the possibility that conflict could arise. Social harmony and political uniformity are traits which cannot necessarily be construed as assets in relation to socio-technological innovations and social change, for conflict among social groups can occur at any point where populations become more diversified in terms of socio-economic characteristics or as current residents are replaced by others; or where the ecological processes of invasion, segregation, and succession become operative.

Since the study areas were located almost exclusively in suburban communities and, in one case, where several layers of government were interlaced, we sought information from citizens and leaders on their attitudes concerning various levels of governmental responsibility. We sought their perceptions on the issue of whether local government had enough power and autonomy to act effectively on the major issues which could affect the social and physical environment of the community. As our findings will show, the pattern of responses indicated that most citizens felt that local and state governments have the power and responsibility to solve such problems as housing, provision for utility services, employment, school construction, and related problems. It should be observed that while a majority of the respondents favored local governmental provisions for utility services, a substantial number of citizens favored state regulation of utility companies and other public service facilities.

If the data are correct, the social climate of the study areas appears to be conducive to the demonstration and implementation of an innovative service facility such as MIUS. This was clearly illustrated in our examination of certain values of local citizens relative to issues such as reduction of community conflict, the maintenance of friendly relations among people who make decision, and the use of violence. A majority of the citizens felt that it was important to avoid the use of violence; they felt it was important to achieve the reduction in conflict and maintain social harmony. The communities studied appeared to have a low propensity for violence, apparently there is great capacity to absorb change. This low propensity for violence is due, at least in part, to the absence of cleavages or divisions on significant value fronts. Instead of diversity, there appeared to be attachment to a set of common values.

It would seem appropriate for public decision-makers in concert with planners of the MIUS facility to evaluate alternative courses of action in communities showing the potential for the successful

demonstration and implementation of MIUS. Alternatives relative to implementation must incorporate some estimate of the impact of the MIUS facility on the structure of social conflict. Technological projects, programs, and policies which reflect crosscutting conflicts in communities (as was the case with our sample survey communities) are to be preferred to those which pose overlapping conflict structures. In promoting crosscutting conflicts which are mild in comparison to the latter, two values are maximized: (1) that of nonviolent negotiable response to conflict situations; and (2) that of increasing tolerance of dissent, social innovation, and open reception of ideas presented by a variety of social groups, making communication among the various elements less difficult.

High levels of association were found in the rankings of the MIUS utility goals by the sample population.

A high level of agreement was found between the two independent samples in developmental values expressed; in community value orientations; in their attitudes toward change, local, and national orientation.

Even though levels of agreement were moderate on specific developmental values, more agreement was found among citizens of the three study areas than among leaders and citizens.

Leaders tended to favor local regulation of the MIUS facility; citizens slightly favored state or federal regulation of the MIUS.

● Management/Operations for MIUS

A majority of the respondents indicated a preference for management/contract services rather than the typical or general management services usually available in garden-type apartment complexes.

● Utility Goal Assessment

The most desirable and most important goals of the MIUS concept as perceived by the respondents of the study are listed below:

- A. Reduce total energy cost to the nation.
- B. Offers renters and buyers a higher level of utility service at lower operating costs.
- C. More efficient and other resource utilization.
- D. To reduce the volume of solid waste to be disposed.
- E. Allows for increased service capacity with minimum funding requirement at project start.

There was a great deal of value or goal consensus among the survey respondents. In publicity materials about the MIUS project, emphasis should be placed on these goals in areas where population characteristics are similar to those study areas included in this study.

● Proposed MIUS Plans and Benefits

The leadership sample group indicated an interest in the following specifications or plans of the MIUS concept:

- A. A system which recycles energy and conserves fuel through a recovery of the energy that is normally wasted when utility services are supplied from separate services.
- B. A system which provides for a reduction of waste transportation costs.
- C. A system that is flexible in terms of land use; where there is savings in time and front load capital costs.
- D. Public and private ownership would be of great benefit to consumers or users.
- E. Local regulation of the MIUS facility.

These findings are considered to be representative of the community leadership's response to certain features of the MIUS concept. Planners, developers, builders, municipal officials concerned with energy resources, and a cross-section of leaders from various institutions were among those responding to this question.

In an overall sense, our findings tend to indicate that middle class residents in high density areas (Example: garden-type apartment complexes) appear to favor a combined utility system which has the potential for recycling energy, conserving fuel, and reducing environmental impact. Inasmuch as the MIUS concept contains these benefits or advantages, it is assumed that communities with social climates similar to the ones described here would be an acceptable and feasible site for demonstrating and implementing the MIUS facility.

Issues of Implementation

The planning mechanism for implementing the MIUS concept will require an examination of a number of issues and principles such as are seldom discussed in economic and technical studies. Several of these are discussed in a context of means and objectives for private and public action.

A critical feature of the implementation process is a consideration of the potential costs and benefits for public and private ownership of the Modular Integrated Utility System. Figure A presents an illustrative decision-alternative structure. Certain conditions favoring alternatives and evaluation of the range of choices available may set the implementation process in motion, but the positive outcome of the success of the project will be dependent upon policies which have the potential for yielding positive outcomes for beneficiaries of the services.

The aforementioned cost-benefit analysis of regulatory alternatives for the MIUS concept provides options for implementation. The conditions favoring the alternatives set forth specific criteria which can be useful in determining possible courses of action. In addition to the decisional alternatives offered, other social and environmental costs should also be considered in implementing complex new programs. Hence one must look to the elements or advantages inherent in the social climate to determine whether or not the MIUS concept is in fact acceptable to a certain type of community.

Figure A

Potential Benefits and Costs for Public and Private Ownership of MIUS

		Potential Benefits	Potential Costs	Conditions Favoring Alternatives
Decision Alternatives	Federal or State Regulation	Provisions for technical expertise and financial backing (mortgage insurance, cash, and performance guarantee)	Governmental control; resistance of communities to accept full responsibility of maintenance and operating procedures	Economic--decided savings in overall costs--in user costs (less expensive to users)
	Public: (Local agency regulation) Local or Municipal Government	Nonprofit, tax-exempt status of public operations; tax-financing; simple to administer; cost savings by combined billing; administrative control by public agency provides greater ease in implementing collection policies	Political influence by political constraints; lack of efficiency in labor practices; strikes; public predisposition or preconceived attitudes about the quality and delivery of services	Accumulated experience of contractual operations of public service facility; improved service delivery mechanism; equal hiring practices
	Public Corporation or Utility	Mandatory management/contract services; independent operation without political interference; tax-free--as a self-financing, business-like entity	Monopolistic; pressures; unfair labor practices; discrimination in hiring; strikes, etc.	Provision for regional or unified utility program; centralized administrative control; monitoring of performance and utility rates
	Private (Open Competition)	Competition would keep costs down; where franchises are awarded under competitive bidding system, the users reap the benefits through improved efficiency in collection control	Removal of competitive element may cause duplication of effort; it may result in higher prices to users; the duplication of resources and inefficient use of energy; higher rates of business failures and interruptions in services	Greater administrative control

COMPARATIVE PRIVATE OPTIONS:

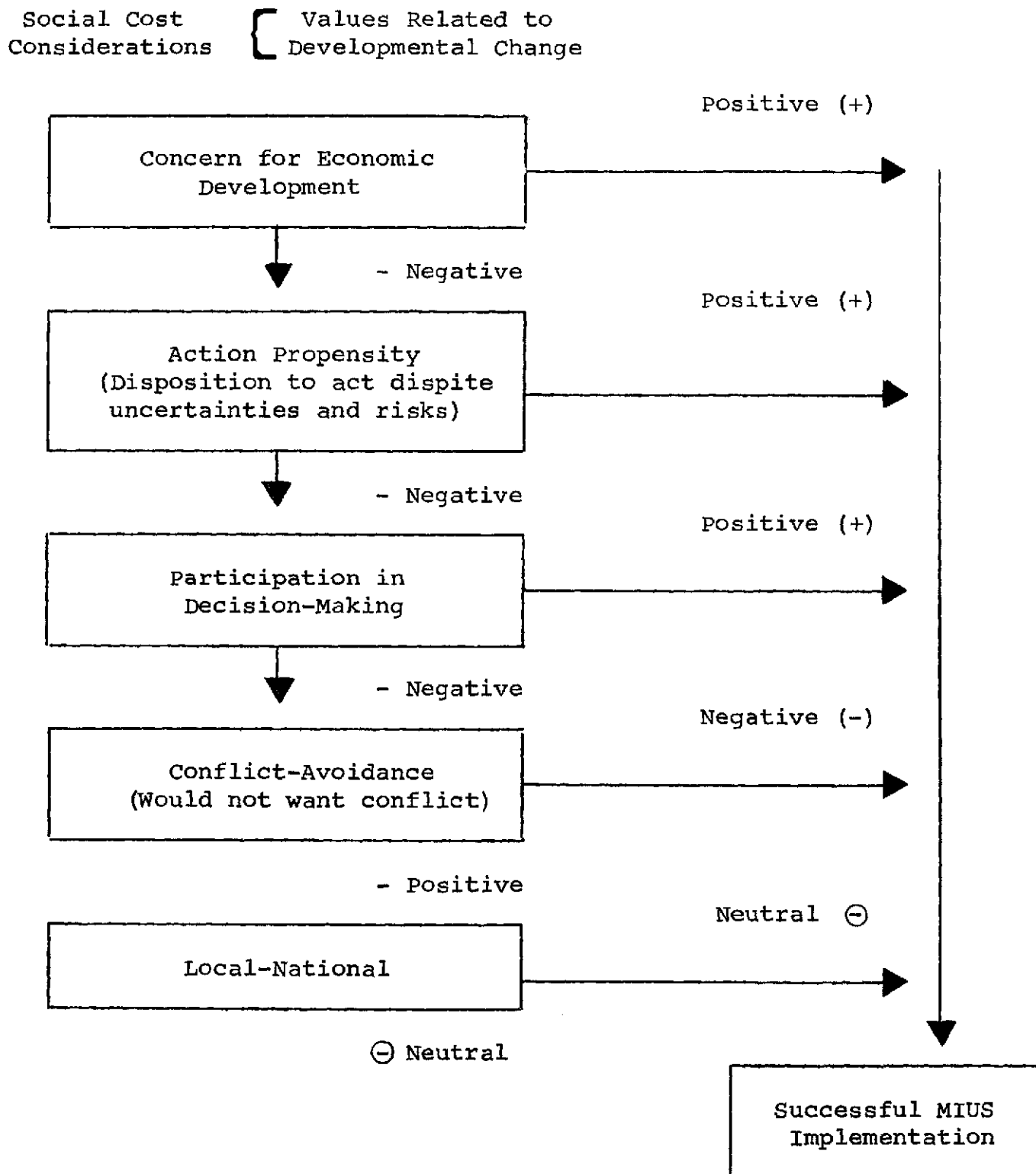
Decision Alternatives	Exclusive Franchises	Less costs involved; community retains control of collection policies	Excessive collection costs in the absence of regulation of franchise by public agency	Awarding of exclusive franchises on a bid basis, with such contracts containing positive incentive clauses for improving efficiency
	Restricted Entry		Subject to political abuse in awarding utility permits; has potential for monopolistic power by private contractors; business failures; overlapping districts	Put forth sustained effort to maintain a competitive atmosphere; limit the number of utility contractors in a given area
	Open Competition	More desirable alternative from standpoint of consumers or users	Lack of administrative control over combined utility services can result in chaos; conspiratorial practices of mutually honoring territories, thereby removing the element of competition from utility service operations--danger of conglomerates	Avoid duplication; provision for federal or state regulation of utilities

A preliminary decision model, composed of developmental community values (the social matrix for development), is presented here. A full explanation of the model's components is described later in this report; a brief description is provided here. Greater details on the elements of the Model are included in the section on "Research Design and Methodology" found in the appendices.

A social climate (a matrix for development) appears to be more conducive to the demonstration or implementation of MIUS if particular indicators are present in the social environment. These indicators, noted in Figure B, provide guidelines for policy.

The Nature of Leadership. A complete explanation of the social environment of a community necessarily entails the nature and influence of local leadership. Two types of leaders emerged in the course of our analysis. Profiles developed included "national innovators" and "local conservors." For communities favoring state or federal regulation of utilities, leaders should be of the former type -- the kind of leaders which demonstrate eagerness for change and a strong national commitment. Communities which tend to favor local regulation of utilities

Figure B



would be less inclined to support new approaches to problems. Leaders who typify the latter trait are more locally-oriented, and are referred to for purposes of this study as "local conservors."

Conflict and Cleavages. One of the most important potential social costs to the MIUS facility is an atmosphere for active opposition to potential locations for site demonstrations or resistance to implementation. This kind of conflict can have a significant impact on the capital costs of the project; inducing a promise-delivery gap into project operations. According to Dahl, the intensity or severity of a conflict depends on several factors:*

The way in which relevant attitudes are distributed among citizens. It is hypothesized that the greater the number of citizens holding extreme (and opposing) views, the more severe a conflict is likely to be. Further, the more extreme the views of political leaders and activists in comparison with the views of ordinary citizens, the more severe the conflict. Conversely, if moderate views are held by political leaders and activists, the less severe the conflict is likely to be. It should be noted that the study communities in our study held moderate rather than extreme views.

Patterns of cleavage may intensify conflicts. The more conflicts accumulate along lines of cleavage,

*Excerpted from Robert A. Dahl, Pluralist Democracy in the United States: Conflict and Consent, (Chicago: Rand McNally Co., 1967), pp. 279-280.

the more severe they are likely to be. Conversely, the more conflicts intersect along different lines of cleavage, the less severe they are. Our study findings showed little or no evidence of lines of cleavage in the communities.

The more at stake, the more severe a conflict is likely to be. Because of the limited data available on the MIUS project, it is difficult for us to assess whether communities would have anything at stake. Here again, benefits would have to be weighed against both economic and noneconomic costs.

A conflict in which no competitor makes himself better off except by making other competitors worse off will probably be more severe than a conflict in which such a possibility does not exist. This is an area in which further research is recommended. Our study did delve into attitudes and perceptions of utility companies toward the MIUS concept, except for the few included in the leadership sample.

Incompatible ways of life or heterogeneity in population can cause severe conflict. The survey population included in this study was a homogeneous group.

Based on the above factors, the following model is presented as a screening and selection mechanism when considering potential sites for the MIUS demonstration and implementation.

Figure C

Factors That Moderate or Intensify Conflict

FACTORS THAT MODERATE OR INTENSIFY CONFLICTS	CONFLICT IS MORE LIKELY TO BE:	
	<u>Moderate</u> (if)	<u>Severe</u> (if)
The distribution of attitudes:		
● Attitudes of citizens are	Convergent	Divergent
● Attitudes of political leaders and activists are	Convergent	Divergent
Lines of cleavage are . . .	Overlapping (Cross- Cutting)	Non-overlapping (Cumulative)
Threats to way of life are .	Absent	Present
● Privileged groups feel	Secure	Threatened
● Aspiring groups feel .	Successful	Frustrated
Institutions provide:		
● Negotiations for consent but no decisions . . .	No	Yes
● Decisions without consent	No	Yes
Agreed processes for nego- tiating consent and ar- riving at decisions . . .	Yes	No

This paradigm on conflict and consent which typifies the potential mood of users and non-users alike should be utilized in locational decisions relative to the MIUS facility. Consideration of the above factors become important in assessing the feasibility of the MIUS concept. Successful implementation of the MIUS will depend primarily on local acceptance, local attitudes and perceptions toward the goals of the project, attitudes toward economic progress, local marketing orientations, and the degree of participation in decision-making by users. If there is a deliberate and honest effort to involve users in planning and decision-making; if user and community objectives are measured and intercorrelated for level of congruence in values; and if there is a positive reaction by a majority of the community residents, it will probably be possible to successfully implement the MIUS concept.

Facility Implementation Strategy

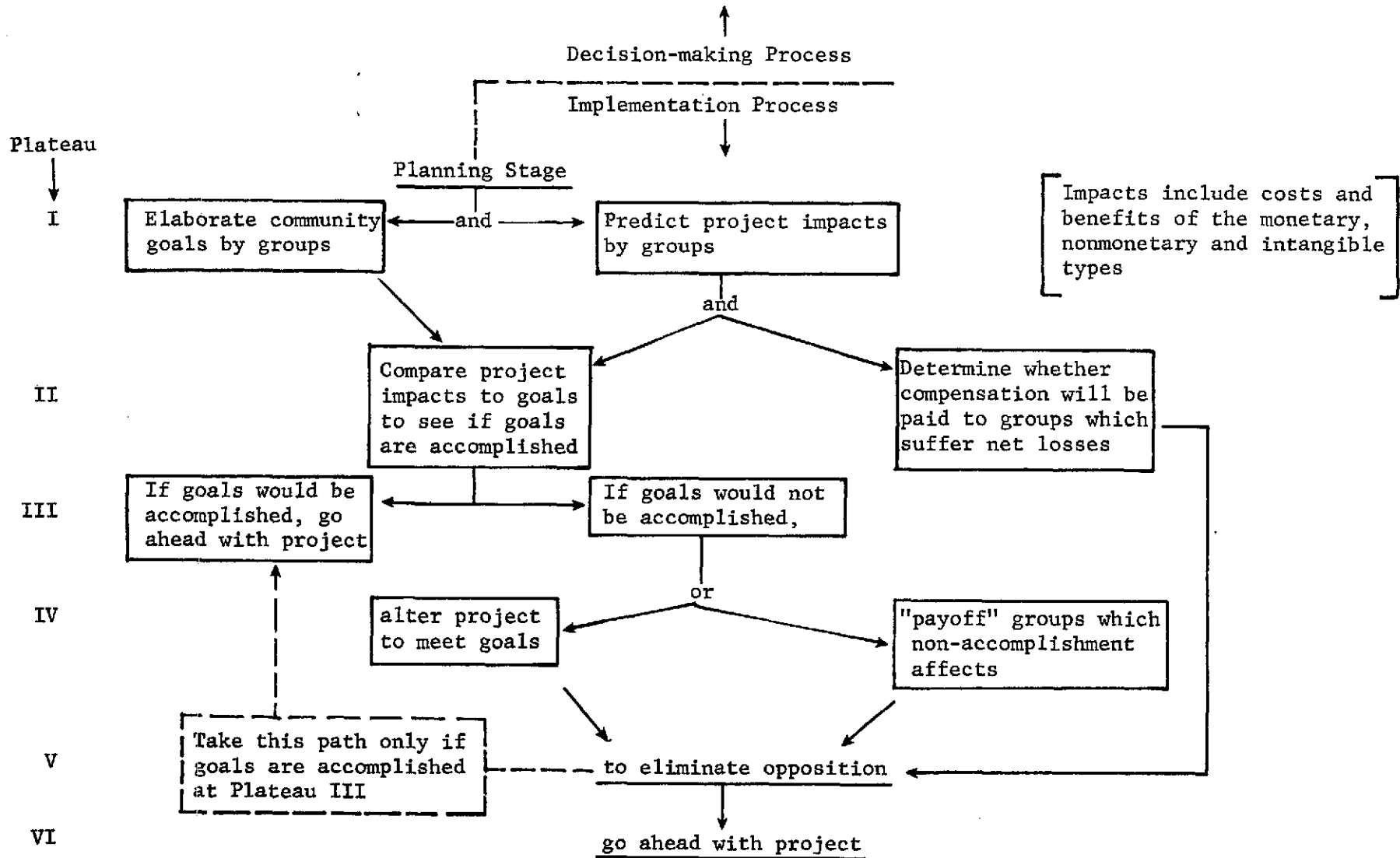
This section is designed to provide a frame of reference for a facility implementation strategy. As the final step, a rational and simplified planning procedure that is considered suitable for the implementation of the

MIUS concept is described.

In short, the facility implementation strategy provides for both primary and secondary consequences -- all of which are designed to eliminate opposition to the project so that implementation is accomplished. The method of plan implementation requires the elaboration of community goals by groups and a prediction of project impacts expressed in terms of costs and benefits of the monetary, non-monetary and intangible types. For each goal elaborated, costs and benefits are compared; for each objective and for each alternative course of action, costs and benefits must not only be compared but aggregated where possible. To simplify the facility implementation procedure the following procedure is recommended.

Figure D

FACILITY IMPLEMENTATION STRATEGY



In this analysis, several plateaus are outlined, including: (1) an elaboration of community goals by groups and a prediction of project impacts by groups; (2) comparing project impacts to goals to see if goals are achieved and determining whether compensation will be paid to groups which might suffer new losses; (3) if goals are accomplished, planners should go ahead with the project; if goals are not accomplished, planners should proceed to next plateau; (4) alter project to meet goals or "payoff" groups which non-accomplishment affects; (5) accomplishing prior options, eliminate opposition; and (6) go ahead with the project. It should be noted in Figure D that if goals are accomplished at Plateau 3, the project can proceed after payoffs to groups which suffer new losses. A full explanation of the procedures recommended may be found in studies completed by Austin, Wolpert, Hill, Mumphrey, and Lichfield.*

*For further details, see: M. Austin, T. Smith, and Julian Wolpert, "The Implementation of Controversial Facility-Complex Programs," Geographic Analysis, 2 (1970), 315-329; Morris Hill, "Goals-Achievement Matrix for Evaluating Alternative Plans," Journal of the American Institute of Planners, 34 (January, 1968), 19-26; Anthony J. Mumphrey, Jr., et al., "A Decision Model for Locating Controversial Facilities," Journal of the American Institute of Planners, 37 (November, 1971), 397-402; N. Lichfield, "Cost-Benefit Analysis in City Planning," Journal of American Institute of Planners, 26 (Nov., 1960), 273-279; and A. J. Mumphrey, Jr., "Metropolitan Goals in Facility Evaluation," (in publication), USI, UNO, 1974.

The validity of the facility implementation strategy may be strengthened through further research on social cost considerations. It is, therefore, recommended that consideration be given to research reports relative to the following:

1. Implementation strategy is such a basic issue that a failure to study it in the context of a heterogeneous population aggregate would be detrimental to future developments similar to the MIUS concept. It is, therefore, recommended that further research be conducted to compare attitudes, perceptions, developmental values, and leadership of a population similar to the one used in this study with a more diverse population -- that consideration be given to high density areas in low-income communities, for example.
2. The problem of implementing new programs may be examined more from the perspective of psychological and motivational factors associated with the use of MIUS. Viewed from this perspective, the implementation question is primarily one of the dynamics of interaction -- the social psychological issue of how planners motivate users to accept the MIUS concept in line with design specifications, operational procedures, and stated project objectives.
3. Application of MIUS covers a wide range of residential community developments. Another research approach to the problem of implementation may be an in-depth examination of market-like incentives -- an incentive structure that guides developers, builders, and users to the appropriate choice. The emphasis on incentives goes directly to the critical issue of outcomes and measured accountability of performance. Stressing the incentive-like route may relieve some of the pressures usually associated with the implementation process.

4. Finally, the validity of the aforementioned ideas is not what is at the real crux of the matter. What is most important is that the general question of what incentives will motivate people to accept the MIUS concept; to permit its successful implementation needs to be carefully explored. The relevant findings on social cost considerations presented in this report are restricted to a select group, and they provide significant data on the dynamics of the community environment and potential social costs.

PART I

SOCIAL COST CONSIDERATIONS

THE LOCALITY: AN OVERVIEW OF THE STUDY AREAS

When the decision was made to conduct studies to identify the impact of widespread implementation of the Modular Integrated Utility System (MIUS), the funding agency pre-selected sites for the survey on social cost considerations and legal constraints inherent in the location of the facility. These study areas included Laurel, Maryland in Prince George's County and Aurora, Colorado in Arapahoe and Adams counties. It was also decided that a similar site be selected in Houston, Texas. The community selected for study in Houston is located on the periphery in Harris County.

The study areas represent some diversity in their demographic make-up. From the standpoint of size, the estimate population range was from an estimated 10,526 for the Houston community to approximately 12,000 population size for each of the garden apartment complexes used for the Denver-Maryland samples. Respondents included in the survey represented a mixture of racial and ethnic groups, with the greater proportion of blacks found in the garden apartment complex located in Houston, Texas.

Selection of the sample communities was based on population size, diverse demographic characteristics, and some of the featured specifications set forth in preliminary design studies for the integrated utility system. It should be noted that there was relatively little differentiation among the citizens and leaders studied when compared on the basis of socio-economic status for Aurora and Laurel. The Houston sample appeared to be more diverse than the Denver-Maryland survey groups. The residents of Denver-Maryland were mostly middle-class; the residents of Houston were a mixture of lower class citizens, lower middle class and middle class citizens.

The City of Laurel, representing a 900-acre cell lying entirely within Prince George's County, had a population of 10,525 within its corporate limits as of April, 1970. The estimated annual family income was in excess of \$15,000, with the percapita income in excess of \$4,000. These conservative estimates exceeded the comparative figures of \$13,400 and \$3,700 for all of Prince George's County. This excess is attributable to the fact that Greater Laurel has a high percentage of Federal government employees in the super grade pay levels and a lower percentage of low-income residents.

Major employment by occupation of employed residents in the Greater Laurel area are as follows: professional, technical, and kindred, 32.5 percent; craftsmen and foremen, 9.3 percent; sales people, 6.2 percent; service industry, 517 percent; public administration, 27.6 percent; wholesale and retail trade, 14.7 percent. These categories represent major industrial employers. It is estimated that at least 30 percent of the area's employed residents works at the National Security Agency, Fort Meade, the National Aeronautics and Space Administration, and the United States Department of Agriculture -- all located in suburban Maryland, or at downtown Washington's federal installations.

Aurora, Colorado, is divided by two counties, Adams County and Arapahoe County, the dividing line being East Colfax Avenue. The average median income in Aurora has been estimated at \$10,554, somewhat below that of Laurel but slightly higher than the study area in Houston, Texas. In 1973, the population for the City of Aurora was listed at 129,054, with more than 35,000 persons found in Adams County and more than 93,000 in Arapahoe County. Like Laurel, Maryland, large government installations are located in the area. These installations include Lowry Air Force Base,

Fitzsimmons Army Hospital, Buckley Air National Guard, the Federal Center, Air Force Accounting and Finance Center, and the Federal Aviation Administration.

The employment structure for Aurora, Colorado is similar to the Greater Laurel area, with the greater proportion of the population employed in wholesale and retail trade, government, and construction. Major employment areas by occupation in the Aurora area are as follows: government, 21.8 percent, wholesale and retail trade, 26.7 percent; construction, 22.3 percent; services, 15.7 percent; manufacturing, transportation, communications and public utilities, 8.3 percent; finance, insurance, and real estate, 4.2 percent; and agriculture and mining, about one percent.

The garden-type apartment complex surveyed in Houston, Texas had an estimated population of slightly more than 10,000. Located on the periphery of a lower middle class area within the corporate limits of the City of Houston, the area is 98.9 percent black in contrast to the Denver-Maryland samples which are over 90 percent white.

The occupational breakdown includes professional and technical workers; craftsmen and foremen; sales people; service and household workers. The major employment areas for the Houston sample are as follows: professional,

26.7 percent; craftsmen, etc., 15.7 percent; and the remainder includes sales, service, and household workers. The median income for this group was estimated at \$8,122. A delineation of professional and technical workers salaries only showed that the median incomes among this sector ranged from about \$9,000 to \$12,999 per year. The overall median income of \$8,122 is \$2,432 less than that for Aurora, Colorado and a little over 50 percent of the estimated median income of \$15,000 for the Laurel area.

While about 30 percent of the residents of Laurel, Maryland worked at federal installations, this was not true of the Houston sample. A substantial number of residents of Aurora, Colorado worked in large government installations. Less than 10 percent of the respondents included in the Houston sample indicated that they worked in federal and other civil service occupations.

The aforementioned characteristics represent data on the survey areas as opposed to the study populations. In the next section, we outline basic socio-economic and demographic characteristics of the survey population. These data are included primarily for descriptive purposes since a great deal of the information relative to respondents of the study areas have been dichotomized according

to particular dimensions such as citizens versus leaders; Denver-Maryland versus Houston. These dichotomous classifications are believed to provide a basis for a more useful analysis and interpretation of the findings.

SURVEY POPULATION CHARACTERISTICS

We obtained interviews from over 200 households in the garden-type apartment complexes. On the average, the typical respondent in the survey was young. The median age for citizens included in the study was 22 years; the median age for leaders, 35 years. The respondents comprising the citizen group are almost evenly divided according to sex, with 49.1 percent being males and 50.9 percent being 43-males. The respondents comprising the leadership group were predominantly males, with 82.1 percent being male and about 18 percent indicating that they were females.

The typical apartment dweller indicated that he or she had lived in the community for less than two years. When asked the length of time lived in the apartment complex, most indicated that they had resided there less than one year. A further description of the population shows that family size is generally small among apartment dwellers, with

an average of about two persons per household. Educationally, the leadership sample was more highly educated than the citizen sample. The median educational level for citizens was about 12 years; while the median educational level for the leadership sample was at least four years of college or an average of about 16 years.

The greatest proportion of the population lived in the apartment complexes under rental agreements. Only a small proportion of the respondents indicated that they leased the apartment. This pattern appeared to be true for both citizens and leaders. Also, in the citizen group we found that about 94 percent of the respondents rented rather than leased the apartments, with only about five percent indicating that they had signed lease agreements. The leadership sample had a larger percentage of owners than renters, with less than 10 percent indicating that they leased the apartment where they lived.

Over 70 percent of the study population indicated that they were employed. Less than 6 percent were retired or otherwise employed; while about one-fourth of the survey group stated that they were housewives or unemployed.

For the most part, leaders included in the study were interviewed at their place of work. Only leaders were

queried as to whether or not they had ever lived in an apartment. Over 65 percent indicated that they were living in or had lived in apartments. The remaining 34.1 percent stated that they had not.

Income is the most commonly used index of economic well-being of a family or an individual. Such information is usually coupled with how the income is derived, so that there is some indication about the socio-economic situation of the study population. We obtained information on total family income for the year. Our data show that the median income range for the survey population was between \$7,000 and \$10,000 annually. The greater proportion of the upper income group was found in the Denver-Maryland sample, with an even smaller number found in the Houston sample. Occupationally, the survey group showed the following: professional and technical, 36.8 percent; managers/administrators, etc., 7.2 percent; sales workers, 4.6 percent; clerical, 17.1 percent; craftsmen and foremen, 11.2 percent; service workers, 13.8 percent; and the remaining persons were distributed among semi-skilled and unskilled occupational categories.

In summary, the survey population was generally highly educated; more middle class than not; and the

average size of household was small when compared with the total population in each of the areas studied. The greater proportion of household workers were found in the Houston area; while the largest percentage of white collar workers were found among the two other areas, namely, Aurora, Colorado and Laurel, Maryland. The former sample is predominantly black; the latter two samples are predominantly white. While these differentials are noted in our interpretation of the findings, the data -- for the most part -- are presented in a form which delineates citizens and leaders rather than stratifying the population along racial lines. Cross tabulations are used to denote congruence and incongruence in responses from the various samples used in the study.

THE MIUS CONCEPT

A recent publication by the United States Department of Housing and Urban Development (HUD) outlines the MIUS concept, highlights its most prominent characteristics, and explains the potential utility of MIUS to persons concerned with utilities and their regulation. In short, the Modular Integrated Utility System (MIUS) provides all

services -- electricity, heating, air conditioning, water and waste treatment and disposal -- in a single processing plant which conserves natural resources, reduces anergy consumption, and minimizes environmental impact.¹ The MIUS concept brings together subsystems that serve different utility needs and builds them into a master system that performs the combined functions better than conventional, according to the HUD report. Its application covers a wide range of residential community developments.

As defined in the HUD-MIUS program brochure, the overall objectives of the Modular Integrated Utility System (MIUS) are to: (1) provide utility services in an improved manner with advantages in total cost, decreased environmental impact and increased efficiency in the utilization of natural resources; (2) provide utility service capacity at a pace equal to the rate of growth of the new development; and (3) make land available for development in areas that are not being serviced by conventional utility systems or in areas which cannot be served by existing, overloaded systems. An additional objective of the HUD-MIUS program

¹For a complete explanation of the Modular Integrated Utility System, see: HUD/MIUS, Office of Policy Development and Research, U.S. Dept. of Housing and Urban Development, Washington, D.C., pp. 1-20.

is to demonstrate the feasibility of the MIUS concept as a potential alternate means of supplying utility services to communities and to assist in the implementation by the private sector of such an alternate utility service concept.

The purposes of MIUS program efforts were also listed. Included were the following: (1) determine the technical and economic feasibility of the MIUS as a concept; (2) demonstrate and evaluate the performance (technical, economic and institutional) of MIUS as a system in a real-life, full-scale hardware demonstration; (3) disseminate to the private sector data received from such a demonstration; and (4) identify and ameliorate the institutional constraints on implementation of the MIUS concept by private industry and to identify the impact of widespread implementation of MIUS.

Our study on social cost considerations and legal constraints on implementation of the MIUS concept by private industry and to identify the impact of widespread implementation of MIUS.

The study on social cost considerations and legal constraints was initiated within the framework of the latter purpose. Despite advantages which might be inherent in the

MIUS concept, the ultimate measure of success for efforts put forth in designing and demonstrating the concept will be dependent upon the extent to which implementation is mutually acceptable to public and private users of the facility.

We have attempted to outline some social cost considerations associated with the design, demonstration, and implementation of the Modular Integrated Utility System.

SOCIAL COST CONSIDERATIONS

Social cost considerations can be explored by examining major conceptual issues and interactional relationships as they relate to community development. Issues involving the structure of influence in the community; selected environmental characteristics such as ecological, level of economic development; social structure (including lines of cleavages and patterns of conflict); community activities which involve resource mobilization and popular involvement in public life; and change values (including commitment to innovation in social policy by users of the facility, commitment to economic development, perceptions, attitudes, and concerns for public participation in decision-making) are all variables which we believe influence the decision

sequence relative to the implementation of the MIUS facility in both old and new communities. These same elements of influence are treated as key components of the "Social Matrix for Development." We have singled out these areas as well as data on utility management and use of the MIUS facility, utility plans and goal priorities, and certain decisional issues relative to housing for discussion in this chapter. Recommendations and observations are presented in a separate part of the total document.

An important underlying element in community activeness and the overall response of its citizens to innovative service facilities is the pattern of leadership that triggers developmental action in the local community or the negative reaction which discourages such action. In studying social cost considerations in reference to the MIUS facility, we have tried to examine particular local concerns and explore those factors operating within the community which tend to shape social values and impact sources of public vitality.

Man's technological and social environment, and virtually all facets of his actions reflect the fact that people make choices. These choices manifest their pre-

ference which, in turn, mirror their values. One very important consideration related to service facilities induced by economico-technological change is the dual aspect of costs and benefits or the stresses and strains that work upon individual and community values. Innovative change in society renders values susceptible to an evaluation procedure of the cost-benefit type familiar from economic analysis. In the case of any value an individual or a community may hold, we can make a kind of balance sheet of (1) the balance of benefits -- i.e., advantages over disadvantages -- inherent in its realization, as contrasted with (2) the various sorts of costs that would be entailed by the endeavor to bring this realization about.²

When we consider the Modular-sized Integrated Utility System, many vital choices of values must be made. They are vital choices because the values people have are important factors in the determination of their behavior; in influencing acceptance or rejection of a combined utility system. How can we shed light on vital choices in reference to an integrated utility system? What are some

²Kurt Baier and Nicholas Rescher, Values and the Future, (New York: The Free Press, 1969,) pp. 33-37.

social cost considerations in relation to such a facility?

To identify those costs which might constitute the realization of implementation procedures for the MIUS facility; to isolate those factors which tend to undermine potential implementation; and to develop some guidelines based on social values and goal priorities are tasks which we undertake in this study.

We begin with an analysis of how people generally make decisions concerning housing accommodations since the application of MIUS covers a wide range of residential community development. Its scope involves urban redevelopment or new town in-town, consisting of high-density buildings; the new town or free standing new community with a high density core, surrounded by medium to low-density areas; second homes, resort and vacation developments.

Respondents were asked to rank housing decision issues in the order of their importance. These issues included the cost of housing, size of unit, layout/floor plan, apartment versus other type structure, layout/apartment complex, design, location to place of work, utilities, recreational and other facilities. As shown in Table 1, the cost of housing figures prominently in the decision regarding living accommodations. The mean score for leaders was 72.7;

while the mean score for citizens was 86.0. Each group listed "cost" as the number one priority in making decisions relative to housing. For leaders, the size of the unit, 63.1; the layout/apartment complex, 61.2; the overall design, 60.0 and the layout/floor plan, 59.9 -- in the order in which they are listed -- occupied the greatest attention when decisions are made on the housing issue. There is agreement among citizens and leaders concerning the size of the unit as the second issue which they were most concerned with in making housing decisions. Among citizens, however, the location of housing in relation to their place of work (62.4) was more important to them than the floor plan, general layout, or recreational facilities. Decisions regarding utilities ranked 8th among leaders and 7th among citizens in their decisional efforts. While the design of the house ranked fourth among leaders; it ranked eighth among citizens. In sum, the top three issues with which leaders were concerned included cost, size of unit, and layout/apartment complex; whereas, the top three concerns among citizens were cost, size of unit, and location to place of work.

Table 1

Mean Rank of Decision Issues Relative to
Housing Accomodations, 1974

DECISION ISSUES	LEADERS		CITIZENS	
	Mean Score	Rank	Score	Rank
Cost	72.7	1	86.0	1
Size of unit	63.1	2	72.3	2
Layout/floor plan	59.9	5	56.9	4
Apt. vs. other type structure	57.1	6	48.0	6
Layout/apartment complex	61.2	3	48.8	5
Design	60.0	4	44.6	8
Location to work	51.2	7	62.4	3
Utilities	39.9	8	44.8	7
Recreational and other	32.6	9	36.7	9

Although utilities ranked low among leaders and citizens in reference to their influence or impact on decisions relative to housing, the study group did give their reaction to present or existing utilities. The primary concern in this regard related to management and use of conventional utilities. Specific information was sought

concerning the type of utilities presently serving the homeowner/renter and the ownership of the utility company. An overwhelmingly majority of the citizens (93.2%) indicated that they had an electric-gas combination type service where they lived with only about 6.8 percent having an all-electric home. The leaders responded in a similar manner with 89.1 percent stating that they had the electric-gas combination in their apartments and 10.9 percent indicating that they had all-electric apartments. In both instances (citizens and leaders) the greater proportion indicated the electric-gas type combination for their apartments.

The greater proportion of respondents in the study indicated that utility companies were publicly owned. Among citizens, for instance, 58.4 percent stated that the utility companies servicing the apartment complexes were publicly owned while only about 48.1 percent of the leaders responded this way. Thirty-two percent of the citizens were served by privately-owned utility companies while at little less than one-fourth (20.4%) of the leaders were served by utility companies in the same manner.

Table 2

Selected Data Relating to Utility System Management
and Use for Respondents, 1974

MANAGEMENT AND USE	CITIZENS		LEADERS	
	Frequency	Percent	Frequency	Percent
<u>DO YOU HAVE</u>				
An all-electric home	14	6.8	6	10.9
An electric-gas combin.	192	93.2	49	89.1
<u>ARE THE UTILITY COMPANIES</u>				
Privately owned	54	32.5	11	20.4
Publicly owned	97	58.4	26	48.1
Combination	14	8.4	17	31.5
Neither of these	1	0.6	--	--
<u>COST OF PRESENT UTILITIES</u>				
Less than \$20	79	39.9	3	5.4
\$20 - \$39	87	43.9	18	32.1
40 - 49	11	5.6	10	17.9
50 or more	4	2.0	20	35.7
Don't know	17	8.6	5	8.9

We also probed for information relative to the cost of utilities to the respondents. The greater proportion of the citizens revealed that they paid less than \$40 per month for all utility services on a monthly basis. More than 80 percent of the citizens stated that utility costs were less than

\$40 per month; about 48 percent of the leaders felt this way. In the leadership group, it was found that over 50 percent of this group stated that they paid more than \$40 for utilities on a monthly basis. Table 2 shows information on management and use; ownership data regarding utility companies as perceived by respondents; and cost on a monthly basis for present utility services.

Attitudes Toward Conventional Utility System

Another area of interest which was explored in conjunction with conventional utility systems related to "likes" and "dislikes" of user for existing utility services. In addition to the management and use of facilities, we probed for data on perceived advantages as revealed through elements of the conventional system considered satisfactory by the users or public; elements considered unsatisfactory or disadvantageous to the needs of the consumers. Each of these areas of concern provides background data required for an understanding of the reactions to the MIUS concept.

As indicated by Table 3, comments of various aspects of conventional utilities were more general than specific. The particular aspects which citizen groups tended to favor involved such categories as economic (cheaper); organizational

(could become a monopoly); service delivery (less hassle; only one bill); environmental (pollutes; less resource extraction); manpower needs (needing less people to operate; need new training for servicing the facility); integration (more efficient way to offer services); and the more general comments as per good and bad experiences related to conventional utilities. It should be noted that these categories were designed to measure attitudes toward the conventional system as well as MIUS. Consequently, such categories as "Manpower Needs," "Integration," and "Environmental" are more applicable to the latter combined system than the former. An interpretation of the data in Table 3 and Table 4 must be viewed in the light of this fact. As an issue, "Gas" utilities were judged to be a dislike based on an environmental concern. In fact, about 13 percent of the citizens indicated a dislike for "gas" for the conventional system; while 27.3 percent of the leaders expressed the same dislike for the utility. There was a wide variation in the likes and dislikes of citizens and leaders to particular items of conventional utility systems. Water and sewage were disliked because of the economics involved. Many respondents indicated a concern for the increasing cost of these services. Leaders tended to like or favor gas

Table 3

Citizen Responses to Items Regarding Likes and Dislikes
of the Conventional Utility System

ITEMS OF CONVENTIONAL SYSTEM	LIKES				DISLIKES			
	Gas	Electricity	Water	Sewage	Gas	Electricity	Water	Sewage
Economic	8.6	5.0	1.6	0.9	5.0	14.8	5.6	4.1
Organizational	1.4	2.2	1.6	1.7	--	0.8	--	--
Service Delivery	5.0	5.8	1.6	--	4.3	2.3	2.4	4.1
Environmental	2.9	7.9	2.4	0.9	12.9	1.6	4.8	3.3
Integration	3.6	0.7	0.8	0.9	--	--	--	--
Manpower	--	--	--	--	--	--	--	--
General Comments	78.6	78.4	91.9	95.7	77.7	80.5	86.3	88.4
Other	--	--	--	--	--	--	0.8	--
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTE: The Items of Conventional System included comments such as:

Economic - Cheaper

Organizational - Could become a monopoly

Service Delivery - Less hassle; Only one bill

Environmental - Pollutes; Less resource extraction

Integration - More efficient way to offer services

General Comments - It's OK; No complaints

Manpower Needs - Need less people to operate; Need new training for
servicing the new facility

Table 4

Leader Responses to Items Regarding Likes and Dislikes
of the Conventional Utility System

ITEMS OF CONVENTIONAL SYSTEM	LIKES				DISLIKES			
	Gas	Electricity	Water	Sewage	Gas	Electricity	Water	Sewage
Economic	20.0	6.1	3.4	--	9.1	18.5	43.2	47.2
Organizational	--	--	--	--	--	--	2.7	--
Service Delivery	--	3.0	6.9	--	6.1	11.1	2.7	2.8
Environmental	10.0	21.2	10.3	3.7	27.3	--	5.4	--
Integration	3.3	3.0	3.4	3.7	--	--	--	--
Manpower Needs	--	--	--	--	--	--	--	--
General Comments	66.7	66.7	75.9	92.6	57.6	70.4	45.9	50.0
Other	--	--	--	--	--	--	--	--
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTE: The Items of Conventional System included comments such as:

Economic - Cheaper

Organizational - Could become a monopoly

Service Delivery - Less hassle; Only one bill

Environmental - Pollutes; Less resource extraction

Integration - More efficient way to offer services

General Comments - It's OK; No complaints

Manpower Needs - Need less people to operate; Need new training
for servicing the new facility

utilities over the over services.

It is interesting to note that only a small percentage of the respondents indicated things they liked about conventional utility systems. The fact that the percentage was small has significant implications, and may imply that there are more disadvantages than advantages in the utilization of conventional utility systems. This should not be construed as the only parameter which may influence choices made between the existing service facilities and the proposed innovative combined utility system.

There is obviously a great deal more to be considered in assessing both costs and benefits of the two different utility concepts. Equally obvious is the social climate or the environment in which demonstration and implementation is to take place. To this end, we undertook the task of outlining a practical, feasible, and rather thorough analysis of social and environmental influences which could explain the climate of the communities and which could explain the nature of influence which might adversely affect the acceptance or rejection of the modular integrated utility system. In the next several sections, we examine the social climate as a matrix for development; explore problems, values and aspiration of the leadership structure

of communities; examine values for developmental change; discuss attitudes and perceptions of the survey population, conflicts, cleavages, and the political dynamics of the community; and relate these phenomena to elements of the Modular Integrated Utility System concept.

THE SOCIAL CLIMATE: A MATRIX FOR DEVELOPMENT

Without doubt, the Modular Integrated Utility System Concept (MIUS) is symbolic of rapid acceleration in the rate of technological progress in the fields of science and energy. As a major technological innovation, enormous resources must be invested in its pursuits. The seeming randomness in the volume and direction of its benefits, the omnipresent threats to the competitive position of existing private and public utility companies, and the overall costs and benefits inherent in its utilization and implementation -- all emphasize the need to clarify the values and behavior modes of communities.

Analyzing the social and political climates of communities and eliciting the attitudes and perceptions of potential users of the facility tend to become useful only as successive probings become transformed into meaningful

relationships. What follows here represents the values, qualities, and aspirations of citizens and their relationship to community development and community leadership. The influence of leadership in inducing activeness and persuasion of citizens or promoting a climate for the acceptance or rejection of an innovative facility cannot be over-emphasized. Hence, it was important to probe for perceived community problems; it was important for us to understand the socio-politico climate as revealed through attitudes of citizens and leaders relative to commitment to change. It was even more necessary to explore the sources of different motivations for change.

Thus, the survey data reflect a collective response to the social, economic and demographic questions used in assessing the social climate of the communities studied. Without speculating about the full range of factors that may affect social cohesion, we probed for information on the sharing of a common concern for community problems. We sought to determine how narrow or how broad the human base of the community was by asking the respondents to identify important problems facing their community and what they perceived to be important values and ideals. As a means of problem identification, we asked citizens and leaders to

indicate problems or things they were worried about.

These problems are outlined below:

Figure 1

PROBLEM IDENTIFICATION

Social-Environmental (A)	Economic (B)	Political (C)
1. School Busing for Integration	1. Inflation	1. Lack of Public Confidence in Officials
2. Decline in Morality	2. Economic Growth	2. Apathy
3. Slums - Poverty	3. High Cost of Living	3. Community Involvement
4. Pollution: Air & Noise	4. No disaster plan for high rises	4. Lack of Civic Pride
5. Human understanding - Race Relations	5. Increased Population	5. Annexation
6. Education	6. Energy Crisis (Gas Shortage)	6. Zoning
7. Amenities: (poor sewage; poor lighting; water storage; police protection)	7. Increased Taxation	7. No realistic regional government
8. Transportation	8. Adequate housing for low-to-moderate income families	8. Maintaining status quo
9. Crime	9. Employment	9. Politics
10. Tenant situations	10. Urban renewal	10. Citizen input

We did not find a difference in the problems listed by citizens and leaders; or the concerns or worries of the predominantly white sample and the predominantly black

sample. For the most part, the respondents perceived problems of their community to be social-environmental, economic and political in nature. In terms of priority, school bus-ing for integration, a decline in morality; slums and poverty; pollution; and problems of human understanding and race relations were the five socio-environmental problems foremost in the minds of the survey population. Inflation, economic growth, the high cost of living, no disaster plan for high rise apartment complexes; and increased population growth were economic problems which claimed the greatest attention among the group. The lack of public confidence in public officials; apathy; the need for community involvement; lack of civic pride; and annexation were the political concerns having the highest priority in the minds of those responding to the inquiry. There was a congruence of concerns for the problems listed. Other problems mentioned were varied in terms of locality of residences.

In addition to these problem areas, other important elements in the social climate of a community were examined, including the value commitments of citizens and leaders; values related to developmental change; and the qualities of leadership in particular localities. Attention was

directed toward factors of human leadership which had promise for generating developmental change in local communities.

We asked citizens in the communities to respond to several items considered representative of the values, qualities and aspiration of leaders and to rank three of the items in terms of their importance. In Tables 5 and 6 the data show preferences for honesty and truthfulness as prime virtues; social innovation in problem-solving; working for a higher standard of living; the avoidance of conflict, and citizen participation as values and qualities of leadership. When asked to rank certain values, qualities, and aspirations of leaders, the citizens again gave honesty and truthfulness a first ranking with 37.1 percent of those responding assigning this rank to that particular value; innovative social problem-solving ranked second; working for a higher standard of living ranked third; and conflict-avoidance was given a ranking of four. An overall assessment of responses to certain value-orientations, as shown in Table 1, shows the survey group valuing basic virtues and political ideal such as truth, honesty, harmony in relationships; and participation.

Table 5

Citizens Percentage and Ranking of Values, Qualities,
and Aspiration of Leaders

VALUES, QUALITIES & ASPIRATIONS OF LEADERS	Percentage	Ranking
To keep public leaders honest and truth- ful about public affairs	65.7	1
To look for new solutions to problems rather than be satisfied with the way they are	55.6	2
To work for higher standard of living for people	39.4	3
To avoid conflict and maintain good rela- tions among people	37.5	4
To promote citizen participation in de- ciding community affairs	32.9	5
To equalize differences and distinctions based on economic and social distrimina- tion	32.4	6
To give priority to the national goals over requirements of local community	13.0	7
To sacrifice your own interests for the interests of others	10.6	8

Table 6

WHICH OF THE THREE IS MOST IMPORTANT?

Values, Qualities, and Aspirations of Leaders	Percentage	Ranking
To keep public leaders honest and truthful about public affairs	37.1	1
To look for new solutions to problems rather than be satisfied with the way they are	19.5	2
To work for higher standard of living for people	12.7	3
To avoid conflict and maintain good relations	11.7	4
To equalize differences and distinctions based . . .	8.8	5
To promote citizen participation in deciding com. . . .	6.3	6
To give priority to the national goals over . . .	2.4	7
To sacrifice your own interest for the interest . . .	1.5	8

Values Related to Developmental Change

There was also an attempt to measure the degree of commitment of leaders and citizens on five values considered to have impact on the acceptance or rejection of the MIUS facility.

These values, in summary, are: (1) innovative social and economic change; (2) propensity to act against caution and avoidance of risk; (3) economic development and improvements of standards of living; (4) widespread public participation in decision-making; and (5) national-local interests and goals. A brief explanation of measures considered central to understanding the social climate of the community follows:

Concern for Economic Development:

This scale was expected to measure commitment to material progress and well-being -- the general goals of economic development, efficiency and technical competence, and priority of future growth.

Action Propensity:

This scale was designed to assess the individual's personal disposition to act despite uncertainties or risks. It was also designed to gauge feelings of self-containment and satisfaction which one has, as opposed to a need for acquisition and achievement.

Participation in Decision-making:

This scale was considered to be important to relation to the implementation of the MIUS concept. It is intended to measure a concern for popular involvement or citizen participation in the political process. A primary concern of items included in this scale is the extent to which respondents consider expert participation to be in conflict with democratic decision-making.

Conflict-Avoidance:

This scale aimed at measuring the extent to which leaders and citizens were willing to proceed with programs in spite of possible opposition and frictions within their communities. The items included in the scale cast the desirability of community consensus and agreements against desirable collective action that undermine harmony and induce social conflicts.

A basic assumption of the investigation was that a high commitment to conflict avoidance would hinder rather than enhance community development and, hence, affect acceptance of the MIUS concept as an alternative to existing utility systems. It was also hypothesized that a high commitment to conflict avoidance would mean that communities would tend to evaluate programs of change in terms of their implications for social harmony as opposed to their potential for contributing to social and economic advancement.

Local-National

This scale was designed to measure a concern for national interests rather than local interests and problems. It was assumed that leaders and citizens could be devoted to both local and national concerns as opposed to being purely locally-oriented. There is no counter-position measured by the scale. Instead, it is assumed that although commitment in either direction may be stronger, there is some harmony between local and national interests and, on the average, you do not have one without the other.

Table 7 reveals mean scores and the standard deviation (SD) on the developmental scales used to indicate direction of commitment of citizens who were interviewed in three communities. The Standard Deviation (SD) is a measure of the extent to which citizens in the various

communities were comparable in their value commitments. Using averages as a point of departure, these findings appear to be most relevant to the process for implementing the MIUS facility:

1. Citizens tend to be committed to innovative change, participation and economic development. In each instance, the average score is greater than 2.50, which is theoretically the mid-point between the maximum acceptance and maximum rejection of the values.

2. Other related findings indicate that citizens in the communities studied are not action-proned, and they are somewhat indecisive about the value of local-national commitment.

3. A comparison of average scores on the six developmental values between Denver-Laurel citizens and Houston citizens tended to show some variation in such values as conflict-avoidance and participation. Commitment to conflict-avoidance was greater among Denver-Laurel citizens than those in Houston; while the strongest commitment to participation was found among Houston citizens. Average scores on individual sub-sample areas were 2.85 and 3.03 respectively.

Table 7

Value Commitments of Citizens
in Garden-Type Apartment Complexes

Values Related to Developmental Change	All Citizens (N = 216)
Innovative Change	
Mean	2.83
SD	0.388
Conflict-Resolution-Avoidance	
Mean	2.44
SD	0.733
Local-National	
Mean	2.22
SD	0.669
Action Propensity	
Mean	2.40
SD	0.693
Economic Development	
Mean	3.11
SD	0.433
Participation	
Mean	2.74
SD	0.435

*Mean scores indicate that maximum commitment to a value equals 4.00 and the minimum commitment (i.e., maximum rejection) equals 1.00.

The next section is designed to examine priorities among some of the values articulated by leaders, the areas of activities of community leaders, and their general orientation to change.

LEADERSHIP VALUES AND CHANGE ORIENTATION

Baier notes that "the concept of value, in the sense used in 'the value of a thing,' is central to traditional economic value theory . . . Value theory attempts to give a model of the interaction of all the forces which determine the fluctuations of the market value or price of commodities in a given market."³ A criticism of the traditional economic value theory is that instead of providing information on the value of a commodity, it gives the price -- the quantity of resources a person must relinquish if he is to secure the commodity, and "so secure the benefits its possession can yield."⁴

Welfare Economics comes much closer to central value problems than does Traditional Economic Value Theory. In this instance, the term "value" takes on such connota-

³Ibid.

⁴Ibid.

tions as "a person's values," "community values," or "a society's values." With this usage of the concept, there is the task of exploring the individual's preferences and tastes. Given knowledge of his resources, it is assumed that an individual is able to allocate resources in such a way that his values are realized.

In view of this background on the concept, "values" as used in this investigation draw their meaning, at least in part, from the idea of social welfare. Consideration is given to the general question of values as forces which could inhibit developmental change in communities to the point of rejecting the concept of MIUS as an alternative to the conventional utility systems.

A probe of the leadership structure in the communities indicated that more than 50 percent of those included as community leaders were engaged in industrial and economic development activities. Cumulative percentages also show that housing, culture, recreation, sports, and education were areas of activity listed by the leadership. Less than two percent stated that they were engaged in such activities as collection and distribution of public revenue; while a little over 38 percent of the leaders were involved in such activities as public improvements, services,

and utilities. Table 8 gives a distribution of responses to the various activities in which the leadership group were engaged.

Another area of concern was the influence exercised by leaders in inducing social activeness and developmental change. The possibility of conflict between the MIUS facility and existing private utility systems; the potential for protest demonstrations relative to both location and utilization by citizens and other special interest groups are underlying external forces which symbolize social costs. Use of profiles of change orientation made it easy for us to compare the degree of commitment to change by the leadership group. As used in Values and the Active Community,⁵ two types of leaders are described here: National Innovators and Local Conservors. Leaders who simultaneously profess the greatest eagerness for change and the strongest commitment to national goals and interests are called "National Innovators." Those less disposed to support new approaches to problems and are more locally-oriented are called "Local Conservors."

⁵International Study of Values in Politics, Values and the Active Community, (New York: The Free Press, 1971.)

Table 8
Percent Distribution of Areas of Activities
of Community Leaders

STATEMENTS	YES	NO
	(In Percentages)	
Industrial and economic developments	50.9	49.1
Housing	47.3	52.7
Public Improvements, services and utilities	38.2	61.8
Health	23.2	76.8
Culture, recreation, and sports	57.4	42.6
Education	42.9	57.1
Social improvement and welfare	35.7	64.3
Political organization activity	34.5	65.5
Collection and distribution of public revenue	1.8	98.2

*These percentages are based on the total number responding to the question as opposed to total number of respondents in survey.

Based on survey data, about 57 percent of the respondents in the leadership sample could be classified as "national innovators;" while about 43 percent appeared to be more locally-oriented. Possible explanations of why

the leadership differs in this respect may be attributable to the fact that a substantial number of persons included in the Denver-Laurel sample were employed in government installations. A few respondents in the Houston sample indicated that they were or had once been employed in Federal government positions. These findings tend to show that the leadership structure in communities are committed to both national and local interests, with a commitment to national interests somewhat stronger. This fact tends to compare favorably with the value commitments of citizens as related to local-national interests.

A potential social cost in implementing the MIUS facility is the extent to which the social climate is conducive to social conflict. Freeman reminds us that "technological projects, programs, and policies inevitably generate conflict in social systems. Advantages and disadvantages are differentially conferred as some groups find themselves economically and politically rewarded or penalized."⁶ Taking this fact into consideration, we examined the cleavage patterns in the communities and the

⁶David M. Freeman, Technology and Society: Issues in Assessment, Conflict, and Choice, Chicago: Rand McNally College Publishing Co., 1974, p. 85.

respondents' perceptions of appropriate and actual spheres of governmental responsibility for community development.

Socio-Political Structure: Conflicts and Cleavages

The social cleavages or divisions found in communities are factors considered to be important in the study of social cost considerations. The concept of social cleavage refers to patterned differences over value preferences creating conflict between various actors in the socio-political system. A prevailing assumption is that cleavages are omnipresent in social structure. However, according to Freeman and others, "the critical question is whether conflict is patterned so as to be negotiable, and conducted in a nonviolent manner, or whether it is patterned such that it creates high propensity to commit violence."⁷

In exploring the level of commitment by citizens to certain values related to developmental change, it was noted that, on the average, the respondents indicated a moderate-to-high interest in conflict-resolution-avoidance; a low-to-moderate concern for local-national interests; a low-to-moderate concern for participation. Table 9 provides

⁷Freeman, ibid.

information on the composite responses to value items for developmental change; while Table 10 provides comparative data on the level of commitment by citizens to select values on development change for three communities. As indicated in the latter table (Table 10), there is a low-to-moderate commitment by citizens in the Denver-Laurel communities to conflict-resolution-avoidance; a moderate-to-high commitment on the part of Houston citizens to this same value for developmental change. A basic assumption of the scale value was that a high commitment to conflict-avoidance would hinder rather than enhance community development because of the large number of negative items used to assess citizen attitudes. Accepting this premise, it appears that the Denver-Laurel communities would be more amenable to community development by virtue of their apparent low commitment to "conflict-resolution-avoidance," while the Houston community would be less susceptible to conflict-resolution-avoidance by virtue of the moderately high commitment shown. Use of the Chi Square test of significance shows a significant difference between Houston citizens and Denver-Laurel citizens in their commitment to conflict-resolution-avoidance.

Table 9

A Frequency Distribution of Composite Responses to
Developmental Value Items for
All Citizens, 1974

SCALES	ISSUES				
	Conflict-Resolution -Avoidance	Local National Orientation	Action Propensity	Economic Development	Participation
Low	47	80	96	103	64
Medium	98	93	--	--	104
High	62	33	108	99	33

Table 10

The Level of Commitment by Citizens in Three
Communities to Select Developmental
Values, 1974

ISSUES	DENVER-LAUREL			HOUSTON			x ²	Sig
	Low	Medium	High	Low	Medium	High		
Conflict-Resolution-Avoidance	33.1	48.8	18.2	8.1	45.3	46.5	27.34	.00 (S)
Local National	44.2	39.2	16.7	31.4	53.5	15.1	4.46	.11
Action Propensity	44.1	--	55.9	51.2	--	48.8	.74	.38
Economic Development	56.0	--	44.0	44.2	--	55.8	2.32	.13
Participation	29.6	50.4	20.0	34.9	53.5	11.6	2.63	.27

A further examination of the social climate of the high density communities shows some difference in the groups response to action propensity. In assessing the groups' disposition to act despite uncertainties and risks, it was found that the Denver-Laurel groups were higher in their commitment to action propensity than the Houston group.

In addition to examining conflict-resolution-avoidance and action propensity, attention was given to social cleavages in the community. There are two polar types of conflict structures:

1. The Overlapping - associated with limited capacity to absorb change, and with high propensity to commit violence. This means that all planners should assess technological projects with a view toward reducing tendencies for this type of conflict pattern to develop.
2. Crosscutting - is a polar type associated with greater capacity to absorb change and with low propensity for violence. Again, planners must assess technological programs, policies, and projects, with a view toward facilitating growth of crosscutting conflict structures upon social groups.⁸

Freeman, Lipset, and others have indicated that overlapping conflict structures exist when opponent groups are cleaved

⁸Ibid.

apart by differences in significant value orientations which may be economic, educational, political, religious, ethnic, and racial. On the other hand, crosscutting is perceived to exist where conflict structures exist when opponent groups are in opposition over a limited number of cleavage areas, but are allied in common problems and issues in other significant conflicts.⁹

Eight possible sources of divisions in the communities were examined. Differences in education, income, religious belief or affiliation, political views; differences between city and country (urban versus rural); between managers and employees; differences in racial and social origins; and differences between those desiring social change and those opposing it were explored. Table 11 indicates that with respect to cleavages, there appeared to be little division evident in the three communities studied. The lack of perceived conflict and cleavage would reduce the likelihood for activeness on the part of the communities if a MIUS facility was proposed for these areas. It should be clear, however, that this does not discount the possibility that conflict could arise. Social harmony and

⁹Ibid.

political uniformity are traits which might be considered assets in relation to socio-technological innovations and social change, but conflict among social groups could occur at any point where populations become more diversified in terms of socio-economic characteristics or as current residents become more mobile. Data presentations shown in Table 11 indicate that respondents perceive only slight divisions or cleavages in their communities based on income, education, political views, racial and social origins, and between city and country. A majority of all citizens perceived no differences at all as to religious beliefs or affiliation. Less than 20 percent indicated that they perceived of no differences between those desiring social change and those opposing; while 62.2 percent stated that cleavages existed "somewhat" pertaining to the attitudes of community persons toward social change. If one accepts the findings as per the data, it seems that acceptance of the MIUS concept and successful implementation of a combined utility system is more likely to occur in neighborhoods where lines of cleavages and patterns of conflict are virtually non-existent. The lack of such divisions among citizens may provide the necessary impetus for economic development, social innovations, and overall processes

of social growth and betterment. Whether MIUS contributes to the economic development of the community and whether the costs of the facility will outweigh the benefits are questions which must be pondered when one examines attitudes and perceptions relative to the power and autonomy of local governments; indeed, earmarks of governmental responsibility.

Table 11

A Percentage Distribution of Citizens Responses on
Perceived Cleavages or Divisions in Three
Communities

CLEAVAGES	CITIZENS		
	Very Much (percent)	Somewhat (percent)	Not at All (percent)
Differences in education	24.2	64.1	11.6
Differences in income	29.6	55.1	15.3
Differences in religious belief or affiliation	6.1	30.5	63.5
Differences in political views	13.4	51.2	29.4
Differences between city and country (urban-rural)	13.4	53.1	33.5
Differences between managers and employees	14.9	56.4	28.7
Differences in racial and social origins	27.7	52.3	20.0
Differences between those desiring social change and those opposing it	20.2	62.2	17.6

Political Dynamics of Communities

Changes in the amount and direction of social and political dynamism represent the persistent enigmas that have challenged successful implementation of public service facilities. The distribution of power in a community affects its capacity to treat problems and to change. It is useful to devote some attention to major areas of government responsibility, and the power and autonomy of local government. To be sure, decision-making strategies employed by communities are not chosen in a vacuum but reflect the political structure of their immediate environment. The level of citizen participation in decision-making often reflects individual attitudes and perceptions about local government.

Each citizen lives under a set of layers of government, with every unit of government having some autonomy to raise its own revenue and to select from many alternative courses of action those goods and services considered essential to its welfare. The political structure of communities can encourage popular support for a MIUS facility or it can emphasize more the varied costs involved, providing inducements for a negative climate or an unpopular stance in potential areas for the implementation of MIUS.

Since the study areas were located mostly in suburban communities and, in some cases, where several levels of government were interlaced, we sought information from citizens on their attitudes concerning various levels of governmental responsibility and the extent to which the local government had enough power and autonomy to act effectively on major issues. In Tables 12 and 13, we have indicated a percentage distribution of citizen perceptions relative to governmental responsibility, power, and autonomy.

The pattern of responses indicates that most citizens feel that local and state governments have the power and responsibility to solve such problems as housing, employment, school construction, health service, provisions for utility services, and problems of youth. Only in the case of "supporting the arts" did respondents show a willingness to allow the general public (the people) and local non-governmental bodies to assume the responsibility for problem resolution, power, and decision-making functions.

While a majority of the respondents tended to favor local governments providing all utility services, a little over 34 percent favored central or state governmental provisions for utility services. A further examination of attitudes regarding the "regulation" of utilities --

Table 12

Major Areas of Governmental Responsibility as
Perceived by Citizens and Leaders

RESPONSIBILITY	CITIZEN RESPONSE (N=216)		
	Relative Frequency		Adjusted Frequency
	f	%	%
SOLVING HOUSING PROBLEMS			
1-Central or State	100	46.3	49.8
2-Local Gov't	86	39.8	42.8
3-Local Non-Gov't	5	2.3	2.5
4-Leave to People	10	4.6	5.0
5-No Idea	15	6.9	(M)*
SEE TO IT THAT EVERY MAN WHO WANTS A JOB GETS A JOB			
1-Central or State	121	56.0	59.6
2-Local Gov't	60	27.8	29.6
3-Local Non-Gov't	15	6.9	7.4
4-Leave to People	7	3.2	3.4
5-No Idea	13	6.0	(M)*
BUILD SCHOOLS			
1-Central or State	88	40.7	43.6
2-Local Gov't	109	50.5	54.0
3-Local Non-Gov't	4	1.9	2.0
4-Leave to People	1	0.5	0.5
5-No Idea	14	6.5	(M)*
PROVIDE CLINICS, DISPENSARIES, HEALTH CENTERS			
1-Central or State	88	40.7	43.3
2-Local Gov't	79	36.6	38.9
3-Local Non-Gov't	30	13.9	14.8
4-Leave to People	6	2.8	3.0
5-No Idea	13	6.0	(M)*
SUPPORT ART (PAINTINGS, MUSIC, ETC.)			
1-Central or State	24	11.1	12.0
2-Local Gov't	68	31.5	34.0
3-Local Non-Gov't	59	27.3	29.5
4-Leave to People	49	22.7	24.5
5-No Idea	16	7.4	(M)*
PROVIDE UTILITY SERVICES			
1-Central or State	71	32.9	34.6
2-Local Gov't	29	45.8	48.3
3-Local Non-Gov't	35	16.2	17.1
4-Leave to People	0	0.0	0.0
5-No Idea	11	5.1	(M)*
SOLVE PROBLEMS OF YOUTH			
1-Central or State	45	20.8	22.4
2-Local Gov't	133	61.6	66.2
3-Local Non-Gov't	17	7.9	8.5
4-Leave to People	6	2.8	3.0
5-No Idea	15	6.9	(M)*

*M - Symbolizes missing variable for adjusted frequency.

Table 13

Numerical and Percentage Distribution of Responses
Concerning the Power and Autonomy of
Local Government

<u>RESPONSIBILITY</u>	LOCAL GOVERNMENT LACKS POWER AND AUTONOMY		
	Citizens		
	% Yes	% No	% No Idea
Solving Housing Problems	64.4	23.1	12.5
Seeing to it that Every Man Wanting a Job Gets a Job	67.1	21.8	11.1
Build Schools	45.4	43.5	11.1
Provide Clinics, Dispensaries, Health Centers	44.4	44.9	10.6
Support Art (Paintings, Music, etc.)	32.9	54.7	12.5
Provide Utility Services (Light, Water, Gas, Sewage)	43.5	44.9	11.6
Solving Problems of Youth	41.7	46.3	12.0

including the MIUS facility -- revealed that a slight majority of the citizens and leaders were in favor of state regulation of utility companies and other public service operations. When comparing state versus Federal government regulations, the difference was, again, slightly in favor of a state regulatory agency. Fifty-one (51.0%) percent of the respondents indicated a preference for state regulation of utilities: 49 percent believed federal government regulations would be in the best interest of the public.

If our data are correct, the social climate of the communities studied appear to be somewhat amenable to the demonstration and implementation of an innovative service facility such as MIUS. This is more clearly illustrated when we examine certain values of local citizens relative to three issues: reduction of community conflict, the maintenance of friendly relations among people who make decisions, and the use of violence. The first two issues are positive in nature; the latter issue is negative. As shown in Table 14, 38.2 percent of the citizens felt that it was important to achieve a reduction of community conflict; about 60 percent indicated that this was somewhat important to achieve; while about two percent of the citizens indicated that this was something to be avoided. Social

harmony among decision-makers was valued highly by about 31.4 percent of the group; with 64 percent stating that this was only somewhat important to achieve. About five percent of the citizens -- an increase over the number advocating a reduction in community conflicts -- stated that they felt that the maintenance of friendly relations among people should be avoided. A different picture emerges when we examined responses concerning the use of violence. An overwhelmingly majority of citizens expressed the attitude that the "use of violence" should be avoided. There appears to be some inconsistency in this response when you refer to the other items in which approximately two percent of this same survey population indicated that the reduction of community conflict and social harmony among decision-makers should be avoided, unless one remembers that disagreement and conflicts can occur without leading to violence and that where cleavages exist, it is highly probable that some disagreement and conflict will occur. The communities studied appear to have a low propensity for violence, and there exists great capacity to absorb change. Were there overlapping conflict structures, the communities would be more limited in their capacity to absorb change and would be more prone to commit violence. This low propensity for

violence on the part of the communities surveyed may be due to the lack of significant cleavages on significant value fronts, and instead of diversity, there exists attachment to common values.

Table 14

Values of Local Citizens Relative to
Three Issues

<u>QUESTION:</u> How important do you think it is to avoid or achieve each of the following decisions?	% Important to Achieve	% Somewhat Important to Achieve	% Avoid
A. Reduction of Community Conflicts	38.2	59.8	2.0
B. Maintenance of Friendly Relations Among the People Who Have to Make the Decisions	31.4	63.8	4.8
C. Use of Violence	2.5	1.5	96.0

In sum, public decision-makers in concert with the promoters of the MIUS facility must evaluate alternative courses of action in communities considered for demonstrating and implementing the facility. This action should

be based on the estimated impact of the MIUS facility on the structure of social conflict. Technological projects, programs, and policies which reflect crosscutting conflicts in communities are to be preferred to those which project overlapping conflict. In promoting the former, two values are maximized: (1) that of nonviolent negotiable response to conflict situations; and (2) that of increasing tolerance of dissent, social innovation, and openness to ideas from diverse social groups, thereby making information relative to the benefits of the MIUS facility more accurate and obtainable for use by the general public.

The preceding materials have provided an analysis of the description of the population, the attitudes of the respondents toward conventional utility systems; and an overview of the social climate in the communities studied. In addition, we have shed some light on the leadership structures in communities by analyzing their values, aspirations, attitudes, perceptions, and general value-orientations as related to development change. The information contained in the next several pages will show how the individuals in the selected communities viewed the proposed Modular Integrated Utility System concept. We will also try to sharpen the details relative to the advantages and

disadvantages of the MIUS concept as perceived by the respondents; attitudes toward ownership and maintenance of the facility; perceptions and attitudes concerning the goals of MIUS as defined in previous literature; and perceived plans of action for the implementation of MIUS.

ANALYSIS OF THE MIUS CONCEPT

The objective of this section is to shed some light on the perceptions and attitudes of communities relative to MIUS utility goals, plans, operation and maintenance; advantages and disadvantages as seen through the eyes of the respondents. Based on all available data, an attempt will be made to develop a rational procedure to define essential linkages and approaches for demonstration and implementation purposes.

As stated earlier, the Modular-sized Integrated Utility System concept is aimed toward improving community utility services by supplying electricity, heating, cooling, and water/processing liquid and solid wastes, conserving energy and natural resources, and minimizing environmental impact. The survey sought to determine and clarify rather specific goals outlined by planners

of the facility, and to implicitly specify certain goal priorities as perceived by the respondents.

A critical feature of the implementation process is that it requires lower echelon support, namely community acceptance. The upper echelons (planners and designers) may set the implementation process in motion, but successful implementation of a facility or project is dependent upon community attitudes toward goals, objectives; costs versus benefits; and level of satisfaction with as well as involvement in the decisions made. Not only must private citizens be satisfied with the idea of combining all utilities into a single package but also public officials, public and private utility companies, developers, builders, and professional planners must support plans for implementation. Without proper linkage between the desires of the investors and needs and desires of users, different solutions can lead to isolation of planning efforts; sub-optimal yields or optimal arrangements for specialized interests; and conflicts in application when related to the total community; indeed, the total urban development process and structure.

Effective plans depend on working goals, priorities, and criteria; goals accepted by all individuals in the

planning process. Based on these statements, we sought to identify certain utility goals and criteria desirable and acceptable to citizens and leaders in high density areas.

Respondents in the survey were introduced to the MIUS concept -- the integrated approach for providing utility services which combines water treatment, electrical power generation, heating and air conditioning, sewage treatment, and the handling of solid wastes into a single system. Afterwards, they were asked to indicate whether they saw advantages and disadvantages in the alternative approach to providing utility services to communities. Table 15 contains information on advantages and disadvantages as perceived by both citizens and leaders. Certain basic categories were used to analyze the contents of narrative responses on advantages and disadvantages of MIUS. These included the following:

- ECONOMIC - perceiving the system as cheaper than conventional one.
- ORGANIZATIONAL - could become a monopoly.
- SERVICE DELIVERY - information indicating less hassle; only one bill.
- ENVIRONMENTAL - pollutes; less resource extraction.
- INTEGRATION - more efficient way to offer services.

- GENERAL COMMENTS - It's OK; no complaints.
- MANPOWER NEEDS - need less people to operate; need new training for servicing the facility.

Based on these categories, we were able to tabulate information on the advantages and disadvantages of the MIUS facility. As indicated in Table 15, the greatest proportion of the respondents viewed the facility as economically advantageous; while a somewhat smaller proportion tended to concentrate comments on the potential service delivery mechanism, with 25.9 percent of the citizens perceiving of this feature as advantageous; while 17.1 percent of the leaders felt this way.

The cost factor was considered an advantage by 38.8 percent of the citizens and 41.9 percent of the leaders; while the economic (cheaper) or cost factor was considered to be a disadvantage by about 18 percent of the citizens and 28.3 percent of the leaders; the remaining respondents did not comment on the MIUS concept as related to its economic aspect. A significant finding related to the organizational category for the MIUS concept. In analyzing contents of the verbal responses by leaders and citizens, it was found that only five percent of the citizens and about 10 percent of the leaders indicated that they thought

that the MIUS concept showed advantages concerning its potential as a monopoly (organizational); while over one-fourth (27.1%) of the citizens and about 22 percent of the leaders indicated that one of the disadvantages of the MIUS concept related to its potential of becoming monopolistic in its organizational outlook. On the other hand, a substantial percentage of citizens and leaders believed that by virtue of its tendency to integrate utility functions, the concept posed an advantage, namely "efficiency," while about 17 percent of the citizen groups and only about 5 percent of the leaders viewed "efficiency" as a disadvantage. General comments about disadvantages inherent in the MIUS concept were somewhat varied, with about 20 percent of the leaders expressing some reservations about it. Table 15 provides a percentage distribution of the content analysis of responses relative to disadvantages and advantages of the MIUS concept as perceived by citizens and leaders.

Another issue considered in the overall assessment of the MIUS concept was the potential ownership of an integrated utility system. We asked the respondents how they would feel about private ownership, public ownership, government supervision/ownership, or any combination of these. As shown in Table 16, a majority of the respondents

Table 15

Percentage Distribution of Responses to
Advantages of the MIUS Concept

	ADVANTAGES		DISADVANTAGES	
	Citizens %	Leaders %	Citizens %	Leaders %
Economic	38.8	41.9	17.8	28.3
Organizational (Monopoly)	5.0	9.5	27.1	21.7
Service Delivery to Consumer	25.9	17.1	16.1	13.3
Environmental	8.9	18.1	5.1	1.7
Integration Aspect (Efficiency)	18.4	10.5	17.0	5.0
Manpower Needs	2.5	1.9	10.2	8.3
General Comments	0.5	1.0	2.5	20.0
Other	--	--	4.2	1.7

avored public ownership or a combination of public and private ownership. Private and government ownership was favored by about 14 percent of the citizens and about 13 percent of the leaders. Less than 10 percent of the citizens and less than two percent of the leaders stated that they would favor any of the methods of ownership. Private ownership was a method less favorable to the group than public ownership.

When asked what kind of provisions were necessary for maintaining and servicing the facility, a majority of the citizens and leaders indicated that they favored "management/contract" services over general management services, with 46.2 percent of the citizens indicating a preference for this type of service and about 66 percent of the leaders. Only 25.5 percent of the leaders indicated a preference for general management services, but 34 percent of the citizens expressed a preference for this kind of arrangement. Less than one-fourth of the citizens and less than 10 percent of the leadership group stated that they favored "management emergency" services for the facilities. The data in Table 16 reflect a distribution of these responses.

Table 16

Percentage Distribution of Responses to
Ownership and Maintenance

	% Citizens	% Leaders
<u>Ownership Favored</u>		
Private Ownership	8.7	11.1
Public Ownership	34.1	31.5
Government Supervision/ Ownership	11.6	11.1
Private and Public Ownership	22.5	31.5
Private and Government Ownership	13.9	12.9
All of These	8.7	1.9
None of These	0.5	--
<u>Maintenance Favored</u>		
Management Services	33.9	25.5
Management/Contract	46.2	65.5
Management Emergency	19.9	9.0

Utility Goal Assessment

In addition to examining the advantages and disadvantages of the MIUS concept; its management operation,

and preferences for maintaining and servicing the facility, it was also necessary to examine certain established goals or benefits of the MIUS concept.

One prevailing belief is that at the base of a unified approach to planning is found a commonly recognized and accepted set of goals and criteria. Caution should be taken against planning on intuitive insight relative to needs, desires, and aspirations of users of technological innovations. Goal formulation and priorities should be derived from a rationally defined process, partly because the responsibility for goal derivation, formulation, and implementation is as broad as the authority to govern. It is also generally assumed that the plans and goals formulated should reflect concerted behavior to achieve implementation of any service facility considered beneficial to the public. Utilizing this conceptual scheme, the study sought to examine the goals of MIUS; differential responses to those goals; and certain prescribed plans for implementation.

Opinions relative to sets of specified utility goals were obtained from citizens and leaders in the various communities through the use of an ordinal (ranking) scale. The list of utility goals was developed from

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extensive literature reviews of research completed on the MIUS concept and related economic studies of conventional utility systems. We asked the respondents to rank the goals so that it would be possible to ascertain relative congruity in the responses. In a further effort to develop data on MIUS utility goals, respondents ranked the items by the forced-choice process in terms of both importance and desirability. The combination of the results of these two scaling processes yielded a composite score upon which rankings of the items were based. A utility goal of combined highest desirability and importance would have a score of 20.

In computing total responses for leaders and citizens, mean scores were used to demonstrate goal priorities. As shown in Table 17, the goal having the highest desirability and importance was the one which "offers renters and buyers a higher level of utility services at lower operating costs," with a mean score of 18.90 and a SD of 2.79 for citizens. Leaders ranked this same goal highest with a mean score of 18.04 and a SD of 4.04. There was complete agreement among all respondents on the aforementioned goal.

Other utility goals were ranked in a different manner. Citizen groups ranked the goal: REDUCE TOTAL

ENERGY COST TO NATION, as one of the most desirable and important goals which MIUS can potentially achieve.

Leaders also assigned a high priority to this particular goal. In the former case, the assigned mean rank was 18.30 (out of a possible total score of 20) for citizens and 18.26 mean rank by leaders. The standard deviation in the former case was 3.36; the latter, 3.52. Although some of the items were ranked lower than others, no respondents remained neutral on any of the MIUS goals (which would have carried a mean rank of 10 or below).

The least important goals, in order of importance, were ranked in the following manner by citizens: Open new lands to development; and make utility lines available to unconnected grids or sewage lines. The lowest goal priorities for leaders related to minimizing environmental impact. The goal which called for "Minimizing the environmental impact by a 35 percent reduction in combustible products from heating, space, water, electrical power generation, etc.," was ranked 14.40 (SD=5.04); and the other environmental-related goal stipulates that "environmental impact will be minimized with an 80 percent reduction in liquid treated sewage. On the other hand, the leadership group placed a somewhat higher priority on minimizing

Table 17

The Ranking of MIUS Utility Goals by Mean Scores and
Standard Deviation for Total Survey Population

MIUS UTILITY GOALS	CITIZENS (TOTAL) SCORE			LEADERS (TOTAL) SCORE		
	Mean	SD	Number	Mean	SD	Number
1. Offers renters or buyers a higher level of utility services at lower operating costs.	18.90	2.79	143	18.04	4.04	53
2. Make utility lines available to unconnected grids or sewage lines.	13.92	5.75	141	15.64	4.91	53
3. Open new lands to development.	13.20	6.34	142	15.35	5.50	55
4. Provide an alternative method of meeting increases in demand for an electric utility company which cannot find suitable sites for locating new central power stations.	16.25	4.57	142	16.11	5.22	53
5. Allows for increased service capacity with minimum fundings requirements at project start.	16.38	4.85	142	16.40	4.79	52
6. Reduce the need for additional sewage lines and sewage treatment capacity, while raising the quality of treated sewage.	15.47	5.59	142	16.09	5.24	54
7. To reduce the volume of solid waste to be disposed.	16.64	4.53	142	16.76	5.10	54
8. More efficient and other resourceutilization. (Energy can be reduced 35% for heating hot water, air conditioning and generation of electricity.)	16.50	4.92	142	17.06	4.23	55
9. To Provide an option that allows greater flexibility in urban development and growth.	14.49	5.98	140	15.22	5.22	55
10. Minimize the environmental impact: 50% reduction in heat to either bodies of water or atmosphere from the generation of electricity.	15.81	5.20	137	14.98	5.17	55
11. Minimize the environmental impact: 35% reduction in combustible products from heating (space, water, etc.) and electrical power generation.	15.72	5.09	137	14.40	5.04	52
12. Minimize the environmental impact: 80% reduction in liquid treated sewage.	15.67	5.46	136	14.92	5.50	52
13. Minimize the environmental impact: 65% reduction in land pollution from solid waste disposal.	16.23	5.21	136	15.46	5.63	52
14. Reduce total energy cost to nation.	18.30	3.36	141	18.26	3.52	55
15. Encourage private and other institutional participation in providing utility services.	15.49	5.82	137	16.63	5.18	54

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environmental impact where a 65 percent reduction in land pollution from solid waste could be achieved. As Table 17 shows, both groups placed some emphasis on the goal which would assure more efficient and other resource utilization. To achieve this goal, energy could be reduced by 35 percent for heating hot water, air conditioning and generation of electricity.

In Table 18, respondents from the three communities were asked to rank these same goals. Denver and Laurel communities were combined into a predominantly white sample to be compared with the Houston community, a predominantly black sample. A comparison of the reactions of citizens by race shows that black citizens ranked the goal of "offering renters and owners a higher level of utility services at lower operating costs" higher than whites; while whites placed greater importance and desirability on "more efficient resource utilization" than their black counterparts. Differences in the ranking of goals appeared to be significant for two goals. Black and white citizens showed a significant differences in responses to the goal of "making utility lines available to unconnected grids or sewage lines," with a Chi Square of 34.04, significant at the .01 level of confidence. The goal, "In

Table 18
The Comparative Rankings of Utility Goals by White and Black
Citizens in Various Cities

UTILITY GOALS	DENVER/LAUREL		HOUSTON		χ^2	Sig.
	Mean	Frequency	Mean	Frequency		
A. Offers renters or buyers a higher level of utility services at lower operating costs.	18.64	83	19.25	60		.50
B. Make utility lines available to unconnected grids or sewage lines.	13.02	82	15.15	59		.005
C. Open new lands to development.	12.46	82	14.22	60	29.45	.031
D. Provide an alternative method of meeting increases in demand for an electric utility company which cannot find suitable sites for locating new central power stations.	16.00	82	16.60	60	17.17	.44
E. Allows for increased service capacity with minimum funding requirements at project start.	15.18	82	18.02	60	29.14	.02
F. Reduce the need for additional sewage lines and sewage treatment capacity, while raising the quality of treated sewage.	15.12	83	15.95	59	15.11	.52
G. To reduce the volume of solid waste to be disposed	15.51	83	18.24	59	27.00	.04
H. More Efficient and other resource utilization. (Energy can be reduced 35% for heating hot water, air conditioning and generation of electricity)	17.19	83	15.53	59	27.02	.02
I. To provide an option that allows greater flexibility in urban development and growth.	14.06	82	15.09	58	32.70*	.01
J. Minimize the environmental impact: 50% reduction in heat to either bodies of water or atmosphere from the generation of electricity.	16.30	79	15.14	58	23.04	.15
K. Minimize the environmental impact: 35% reduction in combustible products from heating (space, water, etc.) and electrical power generation.	16.22	79	15.03	58	23.98	.09
L. Minimize the environmental impact: 80% reduction in liquid treated sewage.	16.21	78	14.95	58	21.06	.18
M. Minimize the environmental impact: 65% reduction in land pollution from solid waste disposal.	17.15	78	14.98	58	21.53	.15
N. Reduce total energy cost to nation.	18.26	82	18.36	59	12.41	.49
O. Encourage private and other institutional participation in providing utility services.	15.55	78	14.83	59	24.05	.06

*Significant at .01 level of confidence, or better.

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providing an option that allowed greater flexibility in urban development," were also ranked differently by the two groups of citizens. The differences were revealed with a Chi Square value of 32.70, significant at the .01 level of confidence.

In Table 19, the differences are noted between leaders from the predominantly white communities and the predominantly black communities. Respondents ranked three goals differentially. There was a substantial difference in the mean ranking of the goal to "open new lands to developments," with a Chi Square of 23.54, significant at the .002 level of confidence. Black leaders placed greater importance on this goal than white leaders; while white leaders placed greater importance and desirability on reducing the need for additional sewage lines (80% reduction in liquid treatment sewage) and sewage treatment capacity while raising the quality of treated sewage than black leaders. Black leaders were less concerned with minimizing environmental impact than whites; but almost equally as concerned as whites about reducing total energy cost to the nation.

Table 19
Comparative Ranking of Utility Goals by Leaders
According to Race and City of Residence

UTILITY GOALS	DENVER/LAUREL		HOUSTON		χ^2	Sig.
	Mean	Frequency	Mean	Frequency		
A. Offers renters or buyers a higher level of utility services at lower operating costs.	18.29	24	17.83	29	9.74	.37
B. Make utility lines available to unconnected grids or sewage lines.	15.43	23	15.80	30	17.07	.20
C. Open new lands to development.	12.68	25	16.77	30	23.54*	.002
D. Provide an alternative method of meeting increases in demand for an electric utility company which cannot find suitable sites for locating new central power stations.	15.50	24	16.62	29	9.90	.54
E. Allows for increased service capacity with minimum funding requirements at project start.	15.38	24	17.29	28	14.73	.20
F. Reduce the need for additional sewage lines and sewage treatment capacity, while raising the quality of treated sewage.	16.71	24	15.60	30	23.53*	.01
G. To reduce the volume of solid waste to be disposed	16.71	24	16.80	30	9.06	.43
H. More efficient and other resource utilization.	17.92	25	16.33	30	12.38	.19
I. To provide an option that allows greater flexibility in urban development and growth.	16.20	25	14.40	30	18.04	.05
J. Minimize the environmental impact: 50% reduction in heat to either bodies of water or atmosphere from the generation of electricity.	17.08	25	13.23	30	20.81	.05
K. Minimize the environmental impact: 35% reduction in combustible products from heating (space, water, etc.) and electrical power generation.	16.63	24	12.50	28	21.79	.06
L. Minimize the environmental impact: 80% reduction in liquid treated sewage.	17.63	24	12.61	28	26.18*	.003
M. Minimize the environmental impact: 65% reduction in land pollution from solid waste disposal.	17.13	23	14.14	29	18.43	.05
N. Reduce total energy cost to nation.	18.24	25	18.27	30	6.31	.61
O. Encourage private and other institutional participation in providing utility services.	16.79	24	16.50	30	11.16	.60

*Significant at .01 level of confidence, or better.

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Consensus and Diversity

In analyzing responses to goals, we also examined patterns of responses in the interest of determining whether citizens and leaders of the various communities shared common values, ascribed to common goals, and the extent of congruence among goal rankings. Goal priorities were established and categorized in the following manner:

Figure 2

CITIZENS	LEADERS
1. Offers renters or buyers a higher level of utility services at lower operating costs.	1. Reduce total energy cost to nation.
2. Reduce total energy cost to nation.	2. Offers renters or buyers a higher level of utility services at lower operating costs.
3. To reduce the volume of solid waste to be disposed.	3. More efficient resource utilization.
4. More efficient resource utilization.	4. To reduce the volume of solid waste to be disposed.
5. Allows for increased service capacity with minimum funding requirements at project start.	5. Allows for increased service capacity with minimum funding requirements at project start. (Also ranked in the same way was the goal of providing an alternative method of meeting increases in demand for an electricity utility company . . .)

The assignment of priorities to goals, as shown in Figure 2, indicate that there is a great deal of value or goal consensus among citizens and leaders of the communities. The congruence of scores on the five items shown in Figure 2 indicates the extent to which the respondents share a particular value. The rankings of citizens are almost the reverse for those of leaders, with complete congruence on the goal which "allows for increased service capacity with minimum funding requirements at project start." In the other four goals ranked from 1-4, citizen rankings fall one octave lower than those of leaders. To be sure, there is greater similarity than dissimilarity.

To secure a more general view of the degree of consensus among respondents to MIUS utility goals, it was necessary to intercorrelate the goal responses of the population so as to further indicate the extent to which citizens and leaders professed commitments to the MIUS utility goals. In examining intercorrelations, as shown in Tables 20 and 21, we found that the MIUS goals correlated positively and strongly in all three communities among respondents. The mean coefficients of inter-item correlations are significant at the .05 level of confidence. We found a large number of the MIUS goals to be significant, and it is felt

Table 20

LEADER INTERCORRELATION OF MIUS UTILITY GOALS

	Lower Operating Costs	Lines to Unconnected Grids	Open New Lands	Alternative for Demands	Better Project Start	Reduce Sewage Needs	Reduce Sewage Volume	Efficient Resource Use	Flexible Urban Growth	Heat Reduction	Combustible Reduction	Liquid Sewage Reduction	Land Pollution Reduction	Reduce Energy Cost	Encourage Participation
Lower Operating Costs	--	.14	.31*	.32*	.54*	.25*	.32*	.23*	.00	.20*	.33*	.36*	.22	.58*	.00
Lines to Unconnected Grids	--	--	.24*	.33*	.54*	.15	.30*	.27*	.31*	.07	.15	.15	.17	.24*	-.12
Open New Lands	--	--	--	.43*	.30*	.20*	.39*	-.02	.25*	-.00	-.15	.05	.07	.40*	.13
Alternative for Demands	--	--	--	--	.15*	.17	.45*	.00	.32*	.31*	.22	.20	.20*	.45*	.25*
Better Project Start	--	--	--	--	--	.20*	.30*	.20	.25*	.33*	.34*	.23*	.41*	.50*	.04
Reduce Sewage Needs	--	--	--	--	--	--	.43*	.30*	.35*	.35*	.30*	.15	.11	.40*	-.12
Reduce Sewage Volume	--	--	--	--	--	--	--	.44*	.42*	.37*	.33*	.31*	.30*	.50*	.03
Efficient Resource Use	--	--	--	--	--	--	--	--	.55*	.44*	.57*	.30*	.20*	.27*	-.23*
Flexible Urban Growth	--	--	--	--	--	--	--	--	--	.14	.25*	.21*	.32*	.30*	.01
Heat Reduction	--	--	--	--	--	--	--	--	--	--	.01*	.57*	.56*	.25*	-.05
Combustible Reduction	--	--	--	--	--	--	--	--	--	--	--	.71*	.64*	.23*	-.11
Liquid Sewage Reduction	--	--	--	--	--	--	--	--	--	--	--	--	.10	.35*	-.03
Land Pollution Reduction	--	--	--	--	--	--	--	--	--	--	--	--	--	.27*	-.17
Reduce Energy Cost	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.33*
Encourage Participation	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table 21

Citizen Intercorrelation of MIUS Utility Goals

		Lower Operating Costs	Lines to Unconnected Grids	Open New Lands	Alternative for Demands	Better Project Start	Reduce Sewage Needs	Reduce Sewage Volume	Efficient Resource Use	Flexible Urban Growth	Heat Reduction	Combustible Reduction	Liquid Sewage Reduction	Land Pollution Reduction	Reduce Energy Cost	Encourage Participation
Lower Operating Costs	--	.09	.03	.28*	.34*	.37*	.31*	.20*	.11	.16*	.16*	.32*	.17*	.35*	.20*	
Lines to Unconnected Grids	--	--	.64*	.47*	.24*	.48*	.39*	.45*	.57*	.51*	.57*	.55*	.58*	.30*	.45*	
Open New Lands	--	--	--	.42*	.21*	.52*	.24*	.41*	.47*	.52*	.53*	.49*	.52*	.23*	.47*	
Alternative for Demands	--	--	--	--	.33*	.38*	.30*	.41*	.52*	.44*	.49*	.45*	.46*	.45*	.28*	
Better Project Start	--	--	--	--	--	.29*	.42*	.25*	.26*	.26*	.24*	.34*	.28*	.30*	.17*	
Reduce Sewage Needs	--	--	--	--	--	--	.50*	.57*	.51*	.40*	.40*	.71*	.63*	.21*	.53*	
Reduce Sewage Volume	--	--	--	--	--	--	--	.20*	.20*	.20*	.35*	.42*	.35*	.34*	.18*	
Efficient Resource Use	--	--	--	--	--	--	--	--	.50*	.55*	.60*	.63*	.71*	.32*	.37*	
Flexible Urban Growth	--	--	--	--	--	--	--	--	--	.51*	.53*	.50*	.51*	.30*	.52*	
Heat Reduction	--	--	--	--	--	--	--	--	--	--	.93*	.78*	.60*	.35*	.42*	
Combustible Reduction	--	--	--	--	--	--	--	--	--	--	--	.26*	.85*	.39*	.48*	
Liquid Sewage Reduction	--	--	--	--	--	--	--	--	--	--	--	--	.72*	.40*	.67*	
Land Pollution Reduction	--	--	--	--	--	--	--	--	--	--	--	--	--	.37*	.58*	
Reduce Energy Cost	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.10*	
Encourage Participation	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

that the "significance" of this observed positive association is one that cannot be explained simply by chance. The fact that such a large number of MIUS utility goals is significant may be indicative of the fact that the MIUS concept, in total, is most probably one element which contains benefits as perceived by our sample. That is, in addition to showing measures of association, it is perhaps of greater interest to be able to say that the MIUS goals represent greater benefits than costs as a combined concept for utility services. Responses to the MIUS utility goals appeared to indicate preferences for a system which provides utility services in an improved manner with advantages in total cost, decreased environmental impact and increased efficiency in the utilization of natural resources.

In view of the congruence of values of respondents in reference to MIUS utility goals, we also probed the leadership of communities concerning particular plans for implementation. The plans ranged from provisions for technical expertise and financial backing (cash, mortgage insurance and performance guarantee) to federal subsidies to regulation of the MIUS facility; ownership and system components. The final pages of this report are devoted to a discussion of the plans.

APPROACHES TO IMPLEMENTATION

According to previous literature (Leighton, p. 46), the Modular Integrated Utility System program contains three primary elements: planning and technology assessment; a demonstration element; and commercialization as a final element or phase in implementation of the MIUS concept. The latter phases have direct linkage to both public and private involvement in demonstrating and implementing the project. The issue of citizen participation or public involvement becomes even more critical when one realizes that historically utility services -- in a majority of the cases -- have been provided by separate institutions or districts. There are city-owned utility concerns, county-owned utilities, private companies, metropolitan districts, and single authority in areas across the country. The MIUS concept is being offered as an alternative to the conventional separate systems. The question considered in this section is: What plan or plans would be more acceptable to potential users of the facility? What are the benefits as perceived by leaders (developers, builders, lenders, municipalities, etc.)?

In order to examine the above queries, we probed

the sample population for attitudes concerning some plans for MIUS. In order of preference, the leadership of the communities studied indicated a higher degree of acceptance for these plans:

	% Definitely Accepting
PLAN 1.	
Would be interested in a system which recycles energy and conserves fuel through a recovery of energy that is normally wasted when utility services are supplied from separate services.	63.6
PLAN 2.	
A system which provides for a reduction of waste transportation costs.	46.5
PLAN 3.	
Its flexibility in terms of land use, its savings of time and front load capital costs.	43.2
PLAN 4.	
Public and private ownership would be of great benefit to consumers.	37.2
PLAN 5.	
Local agencies would regulate MIUS.	20.9

As indicated by Table 22, the respondents in the leadership sample were not in favor of lenders requiring developers to raise more equity capital than otherwise would be necessary for conventional residential development. The plan receiving least acceptance by the leaders of the

communities was the one which proposed federal or state regulation of MIUS; while a larger proportion of this same leadership indicated some preference for both private and government ownership (as shown in Table 16). It should be noted that this is not consistent with the opinions expressed by citizens regarding the regulation of the MIUS facility. The pattern of responses tends to indicate that while the facility may be privately or federally owned, few leaders would accept federal or state regulation of the MIUS facility. Instead, a larger proportion favored local regulations of MIUS services. The leadership group was less certain about eligibility for federal incentives as aid for the construction of sewage treatment facilities.

"Connecting the total energy system to the local power grid with additional cost advantages" was one plan which caused greater concern than most others. Over 66 percent of the leadership stated that they accepted such a plan "somewhat;" while less than one-fourth (19%) indicated that they rejected the plan somewhat or "definitely rejected" the plan. Only 14.3 percent of the respondents in the leadership group revealed that they would definitely accept such a plan.

Table 22

A Percentage Distribution of Leadership Responses
to Potential Implementation Plans

PLANS	Definitely Accept	Somewhat Accept	Somewhat Reject	Definitely Reject
A. For the MIUS, HUD will provide technical expertise and some financial backing.	18.2	63.6	18.2	--
B. Lenders may require developers to raise more equity capital than otherwise would be necessary for conventional residential development.	9.1	50.0	25.0	15.9
C. The MIUS may not be eligible for such federal incentives as aid for construction of sewage treatment facilities.	6.8	50.0	31.8	11.4
D. Federal or state regulation of the MIUS	7.1	47.6	28.6	16.7
E. Local agencies would regulate the MIUS	20.9	48.8	7.0	23.3
F. A privately owned integrated utility company.	18.6	51.2	16.3	14.0
G. Public and private ownership would be of great benefit to consumers	37.2	46.5	9.3	7.0
H. Total energy systems can be connected to the local power grid with additional cost advantages	14.3	66.7	9.5	9.5
I. A system which provides for a reduction of waste transportation costs.	46.5	46.5	4.7	2.3
J. Its flexibility in terms of land use, its savings of time and front load capital costs.	43.2	50.0	4.5	2.3
K. Would you be interested in a system which recycles energy and conserves fuel through a recovery of energy that is normally wasted when utility services are supplied from separate services?	63.6	34.1	2.3	--

Finally, a system which has the potential for recycling energy, conserving fuel, and reducing environmental impact appears to be the most acceptable to the leaders of the various communities. Similar elements of the combined system were emphasized by the citizen groups. To further validate the more favorable responses regarding MIUS, we asked the leadership if removal of the disadvantages which they had indicated earlier as a basis for rejecting the plans and the MIUS concept would make them accept the integrated utility system idea. A majority of those polled (93.3%) stated that they would accept the MIUS idea if certain disadvantages were removed; while 6.7 percent stated that they would not accept the idea even if such disadvantages were removed.

Would removing this disadvantage make you
accept the integrated utility system idea?

YES	93.3%
NO	6.7%

So far the analysis has undertaken only to provide insights into social cost factors which should be considered in designing, planning, demonstrating, and implementing an integrated utility system. The results of the inquiry certainly do not unveil extreme negative factors relative

to the MIUS concept. Our findings tend to support the contention that barring serious disadvantages, the Modular Integrated Utility System concept is a feasible alternative to existing conventional utility systems. This does not mean that there are no problems inherent in the system concept, either now or in the future. What it does imply is that the costs are no greater than the potential benefits to be derived from the concept. Where this kind of apparent equity exists, consideration must be given to other problems that are subtler, and go deeper. Almost invariably, such problems relate to the level of citizen input in planning and implementing public service facility decision. Some problems emanate from the new mood which was created with the advent of social legislation during the last decade -- where prominence was given to citizen participation in planning and decision-making. This new mood has created, and will continue to create skepticism about programs designed and initiated by established concerns. This skepticism has been healthy, for it has forced developers and public officials to think through their proposals carefully and to consider the broad impact of projects which will affect the quality of life in neighborhoods, and the overall quality of urban development.

One area where the MIUS concept can gain strength over conventional utility planning concepts is in the area of public involvement. With all things being equal, citizen input should not only be sought in planning, demonstrating, and implementing the MIUS facility but actively solicited. Without question, public participation is the key to the success or failure of public service facilities. When users or recipients involved are consulted, the services offered are more soundly conceived and more widely used. The planning enclaves which presently control decision-making in the various fields must become subjected to the open test of need in the broader community. Paraphrasing Aleshire,¹⁰ "The MIUS concept should be socially and physically engineered." No institution or new facility can afford to make the mistake of operating on the assumption that it has the inalienable right to make decisions; plan, demonstrate, and implement public service facilities without involving the people it affects.

¹⁰Robert A. Aleshire, "Planning and Citizen Participation: Costs, Benefits, and Approaches," Urban Affairs Quarterly, June, 1970, pp. 370-393.

APPENDICES

Social Cost - MIUS

APPENDIX A

I. INTRODUCTION

Research and demonstration efforts supported by the Department of Housing and Urban Development, particularly in such areas as waste management, energy systems and installation practice, have been directed toward an integrated utility concept according to recent reports released by that agency. An integrated utility system provides energy, water treatment facilities, electrical power generation, heating and air conditioning, sewage treatment, and the handling of solid wastes into a single system. It has been described as an alternative approach to providing utility services to communities and other institutions. Instead of having separate systems for water, gas, electricity, sewage, and solid waste, the user of the various facilities can expect all of these services to be provided by one unit. More specifically, the integrated utility concept aims toward providing a combined packaged plant, where the "total system" approach treats the various problem aspects simultaneously. (Leighton, pp. 43-44).

The MIUS concept (modular-sized integrated utility system), as it is commonly called, has the overall objectives of providing utility services in an improved manner with advantages in total cost, decreased environmental impact and increased efficiency in the utilization of natural resources. Additionally, there is the added quest to provide these services at a pace equal to the rate of growth of new development. From this brief description of the integrated utility system concept, it is assumed that combining utility functions into a single system offers potential improvements in the manner in which such services were traditionally offered. It is further assumed that such advantages as cost savings and overall community impact for delivering required utility services to the consumer would be greatly enhanced. However, the search for an alternative mode of providing utility services poses some questions relative to its overall impact on and acceptance by communities for which the public service system is intended. An immediate question would relate to what social costs considerations and legal constraints are inherent in demonstrating and implementing the MIUS concept? What are the attitudes of consumers toward the integrated utility concept? How would they rate utility goals vis-a-vis community goals?

"When public service systems are designed in accordance with a highly aggregated definition of the public interest," says Hudson, "their impacts often clash with community welfare as seen from a local perspective." (Hudson, et al., pp. 255-56). To this end, there is a question as to what conflicts and cleavages exist in communities and to what extent will they affect implementation procedures of such a concept? There is need to examine public service system impacts from the viewpoint of legal precedent and from an evaluation of the system goals as perceived by potential users, namely, community residents.

This study focuses on social costs and legal constraints associated with the demonstration, location, and implementation of an integrated utility system. The data are presented in two parts. The first section deals with social cost considerations; the second section provides data on selected legal considerations in planning and implementing public utility systems and what relationship legal opinions involving the establishment and operation of these systems have to the proposed MIUS concept.

II. BASIC RATIONALE OF THE STUDY

In examining legal and other institutional constraints, the role of analogy or "the rule of precedent" was utilized in delineating past court decisions and rulings as the basis for future decisions. Through this process, order and historical continuity was applied to the judicial review of cases involving locating and demonstrating utility facilities.

The total costs associated with the design, demonstration, and location of the MIUS facility involved monetary and non-monetary variables. The costs which many believe form the parameters of choice within which utility decisions have to be made are: (1) the dollar cost which must be made for any form of utility; (2) national security costs associated with increasing dependence on imports from foreign power sources; and (3) social or non-economic costs (or savings as compared to existing systems) which are occasioned by innovative and unconventional types of utility service operations. All three types of costs may have equal weights (or some may be more important than others as determined by the community) when decisions are made relative to locating public service facilities. The task of assigning equal weights or total costs is not easy. However,

equity considerations must be incorporated into planning decisions regarding public service facilities and, as such, the business of weighting tradeoff becomes particularly difficult. (Mumphrey, 1973).

The study confines its inquiry to social cost analysis and combined utility goal assessment. It will be our purpose to describe and analyze certain social data which apparently cannot be embraced in a strictly economic analysis. It entails rejecting any notion that decisions relative to the location and demonstration of the MIUS facility can be made solely on the basis of economic cost analysis. Rejection of this notion made some alteration in our thinking about the integrated utility system necessary. This alteration will consist of examining the community in which the facility will be located and the complex interdependence of its parts, including the cultural values associated with spatial areas. It will also involve a recognition that locational activities are not only economizing agents but may also bear sentiments which can significantly influence the locational process. (Simmel, pp. 518-22).

Certain spatial patterns in communities persist despite economic value and land use, and can best be understood in the light of the group values they have come to symbolize.

In such situations are found particular locational processes which tend to defy strictly economic analysis. (Firey, pp. 111-12). Thus a wide range of sentiments, attitudes, and perceptions of the residents of communities have acquired a spatial articulation. The impact of these phenomena upon locational processes and the probable residual effects can be considered as critical issues in estimating potential acceptance of the integrated utility system.

There are aspects other than those pertaining to the spatial dynamics of the community. One such aspect relates to system performance and goal achievement. In the design of any public service facility, the public has to make decisions concerning the advantages and disadvantages of its utilization. Both economic and non-economic cost variables are essential parameters in situations where choices must be made between the existing system and the proposed innovative facility. Associated with this choice is a determination of whether existing service facilities perform satisfactorily. Another decision which must be made relates to the selection of features believed to give the proposed service facility attributes or qualities considered unique and superior to the conventional system and certainly satisfactory in every way. Experience has indicated

that the net benefits of both options may be equal or one service facility may perform more satisfactorily than the other. But, even where equality exists in performance specifications, there is the added dimension of taking into account local conditions and the needs of the community on whose behalf the decisions are to be made. To assess advantages and disadvantages of alternative modes for providing utility services, then, it is important to examine social costs and legal or other institutional constraints.

III. RESEARCH DESIGN AND METHODOLOGY

This section of the report provides information on the research design and methodology used in the study of three selected communities. It provides a schematic design of key variables in the social matrix used to examine social cost considerations, advantages and disadvantages inherent in system utilization, and treats the problem of social costs as a multi-dimensional function in assessing the climate for implementing the MIUS concept. The first dimension is viewed as a measure of the community's vitality; the second, as a measure of the leadership's response to the use of the service facility. In the first instance, citizen attitudes, perceptions, and in general, overall

reactions to power, responsibility, economic development, change orientation, values related to developmental action, conflict-avoidance and cleavages are elements considered in assessing the level of social impulse of the community. The perceptions and attitudes of potential users of the proposed combined utility system are explored. The study also seeks to establish utility goal priorities among alternatives for the combined utility concept. These variables, when combined, add up to some social costs associated with utility system development.

As a matter of definition, the quality and advantages of services rendered by the facility is a function of the benefits of the integrated utility facility. It is assumed that when strengths of the utility system are cast against the backdrop of apparent and inherent weaknesses in the existing utility service systems superiority can be established. The appropriate criterion for social gains or benefits from the systems would then be, where,

$$[\text{gain (MIUS = worth-cost)}]$$

or

$$[\text{net benefit (MIUS) = benefits-costs}]$$

then, compare the net benefits for MIUS with net benefits of existing system.

The goal then becomes that of finding a policy that has associated with it the maximum social gain rather than a policy that is associated with the minimum social cost. Disadvantages or costs and benefits would then be defined within the context of both economic and non-economic costs to users of the facility. Social gain would then necessitate the evaluation of the worth (benefits) and costs of the system's policy and operations through as objective measures as possible.

Previous Studies

Numerous studies are available which deal with public service system, monitoring and operating public utility systems, and system policy operations. Vaswami, for example, discusses the concept of invariance demand as it relates to public service systems. "Ordinarily, service systems . . . do not fully satisfy the assumption of invariance demand and acceptance for service. Commenting further, he states that " . . . systems to approximately satisfy this assumption, expecially when the demand is near the satiation limit." (Vaswami, pp. 740-65). By satiation limit is meant the condition in which the user cost is so low that the users demand services to the full extent of their needs. (Vaswami, pp. 740-65). He discusses the

concept further, by stating that the assumption of invariance demand for service also would hold when the type of service that the facility offers is essential for the way of life of the community served by the system.

In this study, specific attention is given to the potential for acceptance of a "total system" or combined utility concept in community development. The difficulty often encountered in assigning appropriate dollar value to service facilities and some past objections to their use, several assumptions guide this investigation. These assumptions have been extracted from literature on the planning of service systems, particularly transportation system networks. (Vaswami, *ibid.*). We have attempted to make such principles applicable to the utility service system.

The first assumption relates to the concept of invariance of demand for service with respect to the system's policy. This assumption has been discussed earlier. The second assumption relates to system technology. By this is meant that irreducible costs in dollars and time are known before decisions are made. In this instance, previous studies funded by the National Aeronautics and Space Administration through the Johnson Space Center are expected to yield some of these data. Studies have been conducted

which were designed to determine cost relative to constructing and operating integrated utility systems. Researches in areas of waste management, environmental impact on energy utilization, waste disposal, and comparative analyses of MIUS specifications with those of conventional utility systems have provided baseline data for the combined utility system project. (JSC Publications, 1973). The results of these studies show the MIUS facility -- as proposed -- to be somewhat more economical than the conventional ones.

The final assumption of this study is one in which there is possibility for consistency of choice -- where the decision-maker's choice of the two systems is not influenced by any other policy. It is assumed that rational decisions not only will take on an impeditive quality but will entail the additional property of adequate knowledge about tangible and intangible elements about both systems so detailed comparisons can be made. It is assumed that user decisions regarding the combined utility concept will be based on knowledge that he has about its performance, net benefits and costs. With this kind of information in hand, it is theorized that each respondent can rank, rationally,

the goals of the unconventional utility system in their order of importance and desirability for users of the system and the community at large.

Within the framework of these assumptions, the methodology developed for the study is applicable to the value systems of the decision-makers, (i.e., citizens and leaders or all users of the facility) and it is hypothesized that respondents will select features that give to the facility desirable attributes. Or they will reject the system in the same vein by selecting, instead, existing utility facilities because they appear to have satisfactory service delivery mechanisms. Or, both systems may be judged as equals.

Approaches to the Study

The key to total plan evaluation for most service systems is the tempo and level of social impulse of the community that the system is designed to serve. Both users and community objectives should be considered when an assessment of the feasibility of a public service utility system is made. Hill suggests that "there is no single approach to the problem of goals determination that is universally applicable and the methods that are employed will differ from one community to the next, from one sector to the next

or from one governmental context to the next. (Hill, pp. 19-29). He advises that direct approaches might be utilized in formulating community objectives and their respective weights, and further suggests consultation with elected officials, with members of the community power structure, community interests groups; sampling of various "publics" in a community survey, attitude surveys, and public hearings.

Another approach which was used by Jacob and others is one which seeks to determine the tempo of communities through an examination of the dynamics of influence of local leadership; through a determination of local community goals and values; through attitudes toward economic development and change orientations; and by an examination of sources of cleavages and conflict in the local community. (Jacob, et al., pp. 19-25).

The method of approach used in this study combines the two former approaches into a single methodology and utilizes an added dimension through ranking, by importance and desirability, utility system goals. These methodological considerations underscore our attempts to explore the applicability of the integrated utility concept.

Research Objectives

The specific objectives of the research may be summarized as follows:

1. To measure community goals or values in relation to location, demonstration and implementation of an integrated utility system;
2. To examine leadership patterns and sources of cleavages in potential areas for demonstration of the project, and to relate this information to the socio-economic characteristics of the sample population;
3. To obtain, through a selected sample of home interviews, data which may be used to differentiate perceptual and motivational attributes between those who would use the utility service facility and those who make the decisions for the community's welfare;
4. To measure attitudes among a representative group of citizens and leaders concerning the advantages and disadvantages of the proposed "total system" or combined approach to providing utility services and conventional system operations; and
5. To develop, through the integration of socio-economic and motivational variables, a model indicating upon what factors the location, demonstration, and implementation of the integrated utility concept should be based.

The Terms of Reference

The terms of reference for this study are presented in the following operational steps. They are as follows:

- Step 1. A review of preliminary studies relative to system requirements for the design of the facility.

- Step 2. A briefing by the project staff on the economic feasibility study and system technology at the Johnson Space Center, with all staff members for the project (including consultants and graduate students).
- Step 3. Preliminary planning, pilot testing of the interview schedule, site selection, and field enumeration.
- Step 4. Actual field enumeration, checking the accuracy and reliability of surveys, coding, debugging, and programming of data.
- Step 5. Data analysis and interpretation of findings.
- Step 6. Preparation of a tentative draft.
- Step 7. Preparation and publication of the final report.

The major research tasks encompassed the following activities: Value or goal assessment; development of an index of community-ness (including elements in the social matrix for development); collecting data on demographic characteristics of the area and respondents; leadership identification and delineating patterns of potential conflict; determining overall social costs and benefits (non-economic or irreducible costs and economic or dollar costs); and utilizing the data in formulating guidelines and feasible alternatives for the commercialization or implementation phases of the integrated utility system project.

Key Definitions

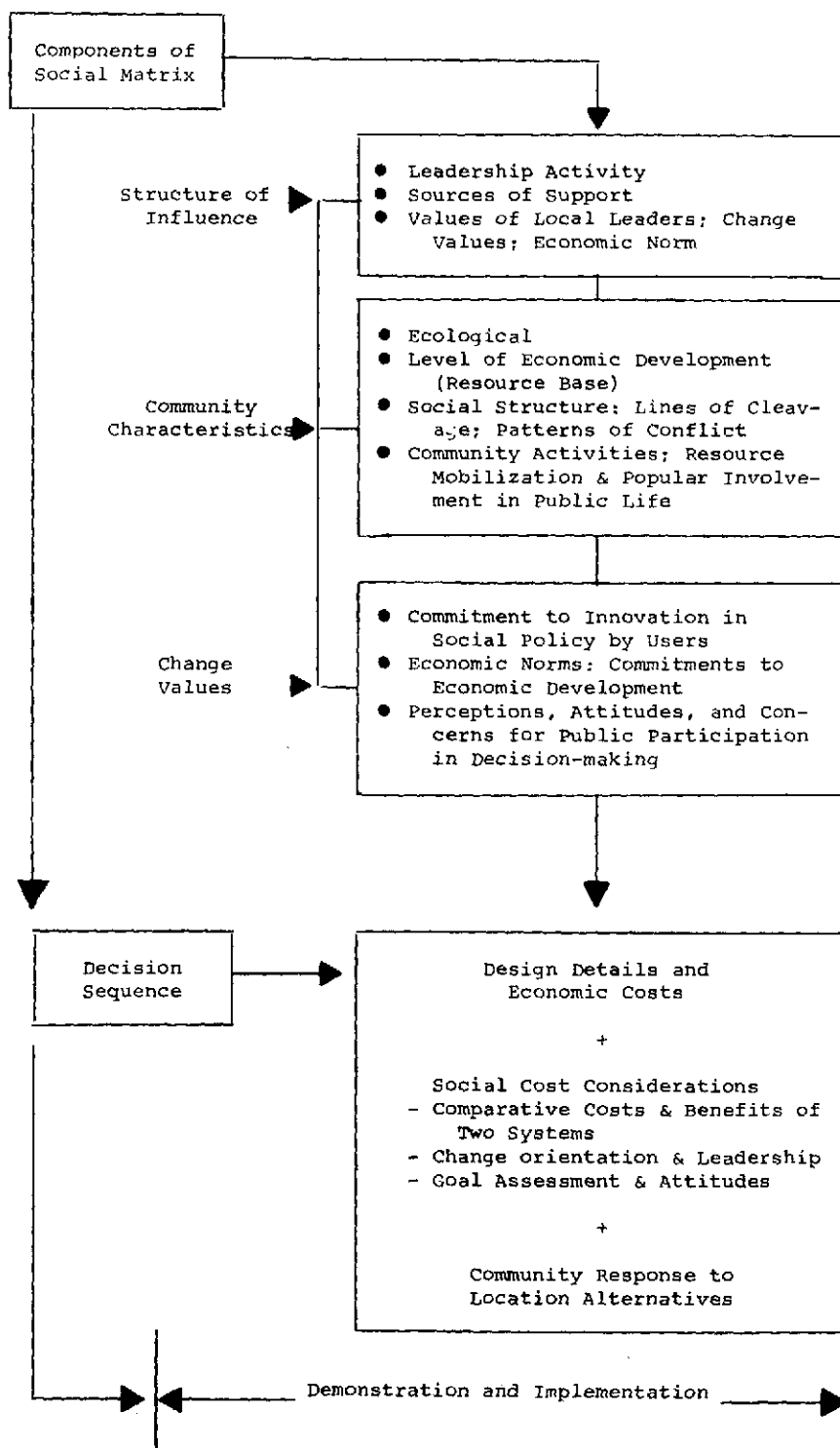
Modular-sized Integrated Utility System (MIUS) - The integrated approach for providing utility services combines water treatment, electrical power generation, heating and air conditioning, sewage treatment, and the handling of solid waste into a single system. Throughout the text, this concept is also referred to as the "total system" approach or the combined approach.

Social Matrix for Development - The major elements in the paradigms envisaged in this study involve a combination of all variables such as community activeness, values of local leaders, community characteristics, personal characteristics of leaders and citizens, and any cross-community systemic differences. The social matrix for local development includes several components: the local structure of power and influence, the cleavage pattern, the incidence of conflict, responsibility and economic development, change orientation, sentiments and attitudes. The complex interdependence of each of these factors are considered to have a significant impact on community activeness, and it is felt that, when combined, these same factors may hinder or enhance the successful demonstration and implementation of a utility service facility.

To further illustrate the social matrix for development, Figure 3 provides the illustration for major conceptual issues and relations in the study.

Figure 3

Major Conceptual Issues and Relationships:
Social Matrix for Development



Methodology

To accomplish the study objectives, data were obtained from a survey of apartment dwellers in three communities. The original design involved a random sample of both citizens and leaders residing in the selected communities. To collect the needed information, three random areal samples of households in garden apartment complexes were selected. Interview schedules were used to collect data from selected households and to conduct in-depth interviews with community leaders and/or decision-makers.

Interview Schedule Design. The interview schedules used in the survey are included in the appendices. Much of the style and several items included in the survey instrument are based on similar attitude studies which have been conducted previously. Certain scale items were replications of those used in Philip E. Jacob, et al., Values and the Active Community, New York: The Free Press, 1971. Special permission was obtained from the publisher for their use. Other questions were adapted from previous studies on locating public service facilities and the combined utility concept. As a matter of explanation, the utility goals were set forth in Leighton's article (cited in the bibliography) on the modular-sized integrated utility concept.

The questionnaire is divided into sections which reflect the broad conceptualization shown in Figure 1. The sections are labeled as household and demographic information; utility management and use; decisional issues; values, qualities, and aspiration of leaders; conflicts and cleavages; conflict-resolution-avoidance; local-national orientation; action propensity and government responsibility; economic development and participation; and utility plans and goals. When combined, these variables constitute the social matrix for development which, when translated, represent the social cost considerations treated in this study.

The data compiled from the interview schedules were essentially nominal; meaning simply that the findings are based on a classification of responses according to various ranges associated with each question or set of questions. Items on the interview schedule were designed to specifically facilitate use of varied measures of significance. Some tables consist entirely of frequency distributions among categorical "cells" because of the size of the same used in the study.

Prior to the field enumeration phase, interviewers conducted a pilot survey to test the reliability of the

survey instrument. This activity was part of the interviewers' training for field work which was to take place in the study areas. During this period, the integrated utility concept was explained to each interviewer and interviewing procedures and sample selection were outlined and a list of instructions was given to each person participating in the field work.

Two interview schedules were used in the investigation. Items in Schedule A were designed to probe the attitudes and perceptions of community residents or citizens while Schedule B was designed for the leaders in the communities.

Advantages and disadvantages of the conventional utility system and the proposed "total system" or combined approach to providing utility services are explored and compared on the basis of consensus or diversity in views between citizens and leaders' between a predominantly white sample and a predominantly black sub-sample. Both congruence in values and diversity in viewpoints are considered to be factors of potential significance.

Basic Procedure. Data for the survey were taken from a sample of households in three communities. The first two communities -- Aurora, Colorado and Laurel, Maryland -- were selected by the funding agency. Apparently these study

areas were considered for community characteristics paralleling the base-line specifications growing out of some preliminary findings of previous studies. The third community, located in Houston (Harris County), Texas, has the same general characteristics as the former areas with one exception. The former communities are predominantly white; the latter one is predominantly black. A full description of the study population, as revealed by the summary data, will attest to this fact.

As part of the research procedures, respondents were selected randomly from predetermined sites. The Johnson Space Center provided the study team data from some of the preliminary design studies conducted under the aegis of that agency. These studies contained some base-line MIUS system characteristics. These data were based on conceptual designs for various single-type facilities, including garden apartments, an office building, a shopping center, a hospital, a school, and high-rise apartments. Subsequent to these studies, the application of the MIUS to a population of 100,000 persons in a new satellite community was also studied. Results of these studies tended to show that the market with the most potential for MIUS applicability and demonstration was an apartment complex ranging in size from

approximately 300 to 1,000 units.* In a review of systems requirements with the Johnson Space Center staff person working with this research project, the study team was given what appeared to be a rather definitive explanation of the MIUS system requirements. The requirements, as outlined, appeared to be more applicable to an apartment complex of roughly 500 units in what was described as a "median climate." These considerations guided the development of the design for the study and the selection of the sample population.

Sample Selection. The sample selection was based on certain fundamental requirements for the MIUS baseline system. The study population was to include residents of garden-type apartment complexes ranging in size from 300 to 1,000 units. The apartments in Maryland and Colorado had 450 units; in Houston, 1,000 units. For the most part, the location of the apartment complexes was found to be in a median climate -- usually located in fringe areas or suburban areas found in close proximity to larger urban centers.

With the assistance of managers of the three apartment complexes used in the study, we were able to systematically select respondents from households on a random basis.

*Preliminary Design Study of a Baseline System. Urban Project Office, Lyndon B. Johnson Space Center, Houston, Texas, April, 1974.

Two hundred and eighteen (218) respondents were selected to participate in the study. The random selection entailed every third apartment on the first floor, third floor, and fifth floor and so on. Additionally, fifty-six (56) leaders from the three communities were also included in the survey. After compiling a list of the leadership in the various communities on the basis of their reputation, position, and decision-making capabilities, respondents were randomly selected from this list.

Several overall characteristics of the populations studied are worth notice: It should be understood that there are some differences among the participating communities. They differ in the number of inhabitants as well as location. Aurora, Colorado, located in Arapahoe and Adams counties, is an incorporated city of an estimated 129,054 persons; Laurel, Maryland, located in Prince Georges County, has an estimated 10,525; while Houston, located in Harris County, has a population of over one million persons. There is little difference in the type of housing for the communities. Both detached single-family houses, multi-family dwellings, and garden-type apartments are found in all three communities. For the most part, the populations studied are highly educated. Respondents were concentrated near the top of the

occupational status hierarchy. The median income is well above the national average; and the make-up of the population included both middle-age and young adults. The overall study population is predominantly white. Despite the differences cited, the study population appears to be more similar than dissimilar to middle-to-upper middle income apartment dwellers.

Measurements. The measurement used in assessing community activeness and values is an additive one, where scores on particular indicators are added or combined to produce the most probable average or mean. Procedurally, the individuals or units were scored on the basis of selected indicators, with differing procedures for weighting overall measures of activeness and values. For value scales, items were scored in terms of four response categories or similar modified responses, (ex. "strongly agree," "agree," "disagree," "strongly disagree"). Items were ordinally ranked in terms of importance. The responses categories allowed for magnitude of differences expressed for each item included in the scale values and also for utility goal assessments. Cross-comparisons between groups (i.e., leaders and citizens; communities) were also made to determine response differentials in value orientations. Intercorrelations were also used in the statistical computations.

FOOTNOTE REFERENCES

- Firey, Walter, "Sentiment and symbolism as Ecological Variables," American Sociological Review, Volume 10 (April, 1945), pp. 140-146.
- Hudson, Barclay M., Martin Wachs, and Joseph Schafer, "Local Impact Evaluation in the Design of Large-Scale Urban Systems," Journal of the American Institute of Planners, Volume 40, No. 4, (July, 1974), pp. 255-265.
- Jacob, Philip E., et al., Values and the Active Community. New York: The Free Press, 1971. Items on the interview schedule were used by special permission granted by Macmillan Press. Also, see: Morris Hill, "A Goals-Achievement Matrix for Evaluating Alternative Plans," Journal of the American Institute of Planners, Volume 34, No. 1 (January, 1968), pp. 19-29.
- Mumphrey, Anthony J., "Equity Considerations and Concessions in the Siting of Public Facilities," Discussions Paper XVII, Economic Geography, April, 1973.
- Mumphrey, Anthony J., "Equity and Efficiency Goals in Facility Evaluation," unpublished paper. Urban Studies Institute, University of New Orleans, 1974.
- Simmel, Georg, "Der Raum und die raumlichen Ordnungen der Gesellschaft," Sozologie (Munich, 1923), pp. 518-522. (The Space and Spatial Order of Society).
- Vaswami, Ram, "The Value of Irreducibles in the Planning of Service Systems," Operations Research, Volume 6 (September-October, 1958), pp. 740-765.
- Vaswami, Ram, "On the Development of Criteria for Service Systems," Doctoral Dissertation, Columbia University, 1958.
- Various Task Force Reports on Concept Evaluation, Johnson Space Center, Houston, Texas, 1973.

Appendix B

Bibliography

Social Costs - MIUS

SOCIAL COSTS - MIUS

BIBLIOGRAPHY

- ACKOFF, RUSSELL L.
1963 "Toward Quantitative Evaluation of Urban Services," in Howard G. Schaller (ed.), Public Expenditure Decisions in the Urban Community. Washington, D.C.: Resources for the Future, Inc., pp. 91-118.
- BAUMOL, WILLIAM J.
1963 "Urban Services: Interaction of Public and Private Decisions," in Howard G. Schaller (ed.), Public Expenditure Decisions in the Urban Community. Washington, D.C.: Resources for the Future, Inc., pp. 1-18.
- CASTLE, EMERY N.
1964 "Activity Analysis and Water Planning," in Stephen C. Smith and Emery N. Castle (eds.), Economics and Public Policy in Water Resource Development. Ames, Iowa: Iowa State University Press, pp. 171-188.
- COUGHLIN, ROBERT E. AND BENJAMIN H. STEVENS
1964 "Public Facility Planning and the Achievement of Development Goals." Paper prepared for Seminar on Land Use Models sponsored by the Institute for Urban Studies, University of Pennsylvania.
- ECKSTEIN, OTTO
1961 "Benefit Cost Analysis and Regional Development," in Walter Isard and John H. Cumberland (eds.), Regional Economic Planning. Paris: European Productivity Agency of the Organization for European Economic Cooperation, pp. 359-377.
- 1958 Water Resource Development, The Economics of Project Evaluation. Cambridge: Harvard University Press.
- FIREY, WALTER
1945 "Sentiment and Symbolism as Ecological Variables," American Sociological Review, Volume 10, pp. 140-146.
- HAVEMAN, ROBERT H.
1966 Water Resource Investment and the Public Interest. Nashville: Vanderbilt University Press.

HERFINDAHL, OTIS C. AND ALLEN V. KNEESE

- 1965 Quality of the Environment. Washington, D.C.:
Resources for the Future, Inc.

HIRSHLEIFER, JACK

- 1960 Water Supply: Economics, Technology and Policy.
Chicago, Illinois: University of Chicago Press.

HUDSON, BARCLAY M., MARTIN WACHS, AND JOSEPH SCHAFER

- 1974 "Local Impact Evaluation in the Design of Large-
Scale Urban Systems," Journal of the American Insti-
tute of Planners, Volume 40, No. 4, pp. 255-265.

JACOB, PHILIP E.

- 1971 Values and the Active Community. New York: The
Free Press. Items on the interview schedule were
used by special permission granted by Macmillan
Press. Also, see: Morris Hill, "A Goals-Achieve-
ment Matrix for Evaluating Alternative Plans,"
Journal of the American Institute of Planners, Volume
34, No. 1, pp. 19-29.

KELSO, M. M.

- 1964 "Economic Analysis in the Allocation of the Federal
Budget to Resource Development," in Stephen G. Smith
and Emery N. Castle (eds.), Economics and Public
Policy in Water Resource Development. Ames, Iowa:
Iowa State University Press, pp. 56-82.

LICHFIELD, NATHANIEL

- 1956 Economics of Planned Development. London: The
Estates Gazette, Ltd..

-
- 1960 "Cost Benefit Analysis in City Planning," Journal
of the American Institute of Planners, 26, 273-279.

AND JULIUS MARGOLIS

-
- 1963 "Benefit-Cost Analysis as a Tool in Urban Government
Decision Making," in Howard G. Schaller (ed.), Public
Expenditure Decisions in the Urban Community.
Washington, D.C.: Resources for the Future, Inc.,
pp. 118-146.

-
- 1964 "Cost-Benefit Analysis in Plan Evaluation," The
Town Planning Review, 35, 159-169.

-
- 1968 "Economics in Town Planning," The Town Planning
Review, 39, 5-20.

- 1965 "Spatial Externalities in Urban Public Expenditures," in Julius Margolis (ed.), The Public Economy of Urban Communities. Washington, D.C.: Resources for the Future, Inc., pp. 207-250.
- 1966 "Cost Benefit Analysis in Urban Redevelopment -- A Case Study: Swanley." Papers, Regional Science Association, 16, 129-153.
- 1962 Cost Benefit Analysis in Urban Redevelopment. Research Report No. 20, Real Estate Research Program, Institute of Business and Economic Research. Berkeley: University of California, 1
- LYNCH, K.
1964 "Quality in City Design," The Impact of Political and Social Forces on Design in America, proceedings of a conference at Princeton University.
- MARGLIN, STEPHEN A.
1963 "The Opportunity Costs of Public Investment," Quarterly Journal of Economics, 77, 274-289.
- MUMPHREY, ANTHONY J.
1974 "Equity Considerations and Concessions in the Siting of Public Facilities," Discussions Paper XVII, Economic Geography.
- 1974 "Equity and Efficiency Goals in Facility Evaluation," unpublished paper. Urban Studies Institute, University of New Orleans.
- PETERS, G. H.
1966 Cost-Benefit Analysis and Public Expenditure. London: The Institute of Economic Affairs.
- PREST, A. R. AND RALPH TURVEY
1965 "Cost-Benefit Analysis: A Survey," Economic Journal, 75, 683-735.
- REAGON, MARK M. AND JOHN F. TIMMONS
1954 "Current Concepts and Practice in Benefit-Cost Analysis of Natural Resource Development," in Water Resources and Economic Development of the West. Report No. 3, pp. 1-15.

SIMMEL, GEORG

1923 "Der Raum und die raumlichen Ordnungen der Gesellschaft," Sozologie, pp. 518-522. (The Space and Spatial Order of Society).

TEITZ, M. B.

1968 "Cost-Effectiveness: A Systems Approach to Analysis of Urban Services," Journal of the American Institute of Planners, 34(5).

VASWAMI, RAM

1958 "On the Development of Criteria for Service Systems," Doctoral Dissertation, Columbia University.

1958 "The Value of Irreducibles in the Planning of Service Systems," Operations Research, Volume 6, pp. 740-765.

Various Task Force Reports on Concept Evaluation, Johnson
1973 Space Center, Houston, Texas.

LEGAL CONSIDERATIONS
OF THE PROPOSED
MODULAR INTEGRATED
UTILITY SYSTEM (MIUS)

Preparation of Report
by
Mary A. Daffin

LEGAL CONSIDERATIONS OF THE PROPOSED MODULAR INTEGRATED UTILITY SYSTEM

Introduction

This section of the study deals with legal considerations and other institutional constraints relative to the demonstration and implementation of the Modular Integrated Utility System (MIUS). The integrated utility concept has some historical antecedents. The primary research activities encompassed the role of analogy or "the rule of precedent" in examining, analyzing, and delineating relevant past court decisions. Hopefully, the findings or rulings will serve not only as a basis for future decisions but such rulings will serve as a guide in the planning, development, and implementation of the MIUS concept. The general procedure used is indicative of order and historical continuity as applied to the judicial review of cases involving the location and demonstration of utility facilities.

Findings of the report are confined to judicial decisions and/or commission regulations relating to the following: public and private utilities standards, duties and liabilities inherent in the ownership and operation of public utilities, public discriminatory policies, classification, rate and liabilities for discrimination; and a review of special codes, restrictions and ordinances.

The report is divided into several parts. Part I provides a brief history of the regulation of public utilities, with specific emphasis on franchises and the concept of police power. Part II provides information on public and private utility standards; Part II reviews duties and liabilities, public discriminatory policies, classification, flat rates, metered rates, discrimination and special rates, liabilities for discrimination, abandonment of service, liabilities from cessation of service, and related matters.

Part III of the report is confined to federal regulations; while Part IV outlines state regulations in reference to public utility systems. The final portion of this section deals with some selected local regulations on public utility operations.

What the writer has tried to do is to review cases having special relevance to matters of utility regulations, with special implications for the proposed Modular Integrated Utility System.

HISTORY OF REGULATION OF PUBLIC UTILITIES

The basis of the American concept of public utilities is the common law of England. The British colonies in the New World adopted a modified fashion of regulating businesses as had existed in the mother country.¹ The common law of England impressed upon certain occupations special rights and duties. These occupations were known as "common callings" and were designated as being "affected with a public interest".² In its legal form, this became known as the "doctrine of public interest".

In its early conception, the doctrine of public interest subjected all businesses to minute and authoritarian control. Through close judicial scrutiny against undue extension, the doctrine has been narrowed in scope, but, it remains nevertheless as a viable legal principle.³

During the early developmental stage of regulating businesses affected with a public interest, the courts were the principle instruments of regulation. As such, they were empowered under the common law to impose certain duties on those businesses.⁴ The duties were enunciated as being to serve all comers, to render adequate service, to serve at reasonable rates and to serve without discrimination.⁵

The first duty under public interest is to serve all who apply for service. As is obvious, the business must

the business must be devoted to a public use before it may be regulated as such and before the duties may attach.

Western Colo. Power Co. v. PUC, Colo.⁶ The duty to serve all comers means that the business must within reasonable limits serve regardless of race, economic and social status, or other differences.⁷

The second duty requires serving up to one's maximum capacity. If the demand warrants, a utility is under an obligation to use its full capacity in order to render adequate service. By statute and commission practice this obligation has been expanded to require the server to be prepared for all foreseeable future increases in demand.⁸

A third duty requires the rendering of safe and adequate service.

The fourth duty forbids unjust discrimination. This prohibition of discrimination among customers does not forbid customer classification for purposes of rate making, but such a classification must be reasonable.⁹

FRANCHISES

Although courts offered a means of checking abuses by public utilities, control was sporadic and of no real effectiveness.

In 1819 the United States Supreme Court decided the landmark case of Dartmouth College v. Woodward.¹⁰ The Dartmouth College case established the legal basis for the

use of franchises as a means of licensing and regulating public utilities as well as other businesses. It was held in this case that the Dartmouth College's charter was inviolable and protected by Article 1, Subsection 10 of the United States Constitution, which prohibits states from impairing the obligation of contracts.¹¹

Because of the very nature of a public utility, it must make use of streets, highways, alleys, and other public property. Before it can do so, it must secure special permission. This special permit is known as a "franchise". In Griffin v. Okla. Natural Gas Corp.¹², it was held that a franchise means "a special privilege conferred by the government on an individual or individuals and which does not belong to the citizens of the country generally, of common right." The necessity of securing a franchise lies in the fact that no one has the right to utilize public property as the place of his occupation, except as he secures permission.¹³ The authority to do business in such a place does not arise by common right but by the grace of the sovereign.¹⁴

The legislature is the source of the utility franchise and the Dartmouth College case held that a franchise or corporation charter was a contract between the state and its private holder.¹⁵ Although the United States Supreme Court had held the charters were inviolable, a policy of strict construction was placed upon the charters.

The concomitant effect of this type of policy was to resolve all doubtful matters involved in a franchise in favor of the state. As a means of regulating utilities, the franchise proved to be a practice fraught with abuses that caused great public dissatisfaction.

Police Power

Public discontent over the granting of franchises reached its peak during the late 1800's. In 1877 the United States Supreme Court decided the famous case of Munn v. Illinois.¹⁶ The Court there held that a state's police power reigned supreme over franchises granted to corporations.¹⁷

The phrase "police power" first appeared in the 1827 decision of Brown v. Maryland¹⁸ written by Chief Justice Marshall. The expression is difficult to define in precise fashion.¹⁹ The judiciary has declared police power to be another name for the power of government,²⁰ the power of the sovereignty to govern men and things,²¹ and in a general way that the police power extends to all the great public needs.²² Freund defined police power as "the power of promoting the public welfare by restraining and regulating the use of liberty and property."²³

Police power may be exercised to restrict the use of private property. The main requisite in imposing any type of restriction is that the property must be utilized and

conform to a due public purpose.²⁴

In Munn v. Illinois,²⁵ the Court referred to a public utility as being property "affected with a public interest" and stated that "property does become clothed with a public interest when used in such a manner to make it of public consequence." After this definitive decision, many state legislatures attempted direct regulation of it's public utilities by way of the state's inherent police power. The police power as applied to public utilities allowed for more extensive regulation than could be applied to businesses generally because of "a peculiarly close relation between the public and those engaged in it. . . ."²⁶

The legislature is empowered to exercise the police power of a state. Although this power may not be delegated to subordinate agencies, the legislature may create subordinate agencies to enforce proper regulation upon public utilities.²⁷ State commissions with state wide jurisdiction is an example of the creation of such agency.

The judiciary is empowered with the right to pass upon the reasonableness of a legislative declaration of public interest. The place of the courts in utility regulation is important - more important than that of the commissions when matters of public policy are involved.²⁸

PUBLIC VS PRIVATE UTILITY STANDARDS

A basic determination as to the direction the legal system may take on MIUS is dependent upon a definition of the system. The question posed in making a determination is whether MIUS will be public or private. An assessment of the legal ramifications will be dependent upon this determination. It must be borne in mind that there are certain advantages, at least in a legal sense, in being classified as one or the other. Any utility that operates within the confines of a particular jurisdiction will necessarily be subjected to regulatory agencies. The extent of that regulation, again, will depend in large part upon how the system is classified.

From an examination of state statutory guidelines, it appears to be difficult to avoid a public classification.²⁹ If there is any indicia of a public service function, a classification of public will attach.

Conversely, state statutory requirements will determine what is and what is not a public utility.³⁰ Basically, it is within the inherent powers of the states, via its courts and legislatures, to say whether a utility will be public or private. The benefits that will inure from either classification are not spelled out at this point. Only after regulatory, franchises, and liability factors have been

examined can one point up specific benefits and adverse factors.

In determining whether MIUS will be classified as a public utility, it is necessary to determine whether the system would be engaging in a public service.³¹ One test applied in making this determination is whether the dominant purpose of the utility is the selling of the product or whether it is incidental to some other service.³² In City of Englewood v. Denver,³³ it was held that the City of Denver, in allowing sales of its surplus water to residents of Englewood, is not a public utility; such sales are not impressed with a public interest as Denver's main purpose is to supply its residents and not the general public with water. Another test is that if the utility accepts all applicants, then the service is public.³⁴

The United States Supreme Court established its concept of a public utility in the case of Munn v. Illinois.³⁵ In this decision the Court referred to a public utility as being property "affected with a public interest." The Court further noted that "property does become clothed with a public interest when used in a manner to make it of public consequence and affects the community at large."

Other guidelines were enunciated by Chief Justice Taft, in another leading case.³⁶ He wrote: "Business which, though not public at their inception, may be fairly said to have risen to be such, and have become subject in

consequence to some government regulation. They have come to hold such a peculiar relation to the public that this is superimposed upon them the owner by devoting his business to the public use, in effect grants the public an interest in that use, and subjects himself to public regulation to the extent of that interest, although the property continues to belong to its private owner, and to be entitled to protection accordingly"

From these early decision, it is apparent that there is wide latitude for a finding of public interest.

State court decisions provide additional insight into the definition of a public utility. For example, the Texas court, in its first attempt to define public utilities, said in Moore v. Logan³⁷:

There is no set definition of what constitutes a "public utility," and in fact it would be difficult to construe one that would fit every conceivable case. "Utility" means the state or quality of being useful, hence the expression "public utility" means the state or quality of being useful to the public, generally used in the sense of "public use", carrying with it the duty to serve the public and treat all alike, and precludes the idea of service which is private in its nature. The adjudicated cases show that "public utilities" have been held to include such public conveniences

as sewers, waterworks, gas plants, public parks, a convention hall (owned, controlled, and used exclusively by the city), power stations and equipment, street cleaning equipment, electric light plants, street railways, city cemeteries (used exclusively for burial purposes and open to the public at large), auditoriums, bathing pools, wharves, and golf links (considered within the meaning of a city charter authorizing the municipality to acquire public utilities). The term "public utility" has a broader meaning than that of mere physical equipment. The term "public utility" as operated by a municipality, refers to the entire business, including both the plant and its operation.

The established policy of the Supreme Court of Texas has been that in the absence of a legislative enactment, a business theretofore strictly *juris privati* (not a public utility) will not become *juris publici* (a public utility) as a matter of law by reason of its growth, magnitude, or the number of persons affected by it. This policy is based upon it being within the purview of the legislature not the judicial department of the government to control its property or regulate its use.³⁸

It appears to be the trend among jurisdictions to resort to a policy of pointing out the characteristics of a public utility rather than defining such. This has been the

trend in Texas.

"Sec. 2. When used in this Act, the term "public utility" or "utility" shall mean and include the following:

(a) Any private corporation doing business in Texas, and having the right of eminent domain, and engaged in the business of generating, transmitting or distributing electric energy to the public; or

(b) Any private corporation doing business in Texas, and having the right of eminent domain, and engaged in the business of producing, transmitting, or distributing natural or artificial gas to the public; or

(c) Any private corporation doing business in Texas, and having the right of eminent domain, and engaged in the business of furnishing water to the public; or

(d) Any state agency, authority, subdivision or municipality engaged in the business of furnishing any of the above described services to the public."³⁹

Any attempt to bring MIUS within section 2 as being a public utility would have to be brought upon the bases of MIUS having the right of eminent domain and of being a facility furnishing either telegraphic, telephonic, sewerage, light, gas or water service to the public. The pro-

jected services of MIUS are within the services delineated by the statute. The eminent domain criterion would be met if the MIUS operator is granted a franchise by a municipality for the use of public streets and other public ways.

The Colorado statute is much more comprehensive than the Texas statute. Colorado defines a public utility as:

" . . . every common carrier, pipeline corporation, gas corporation, electrical corporation, telephone corporation, telegraph corporation, water corporation, person or municipality operating for the purpose of supplying the public for domestic, mechanical, or public uses, and every corporation, or person now or hereafter declared by law to be affected with a public interest, and each thereof, is hereby declared to be public utility and to be subject to the jurisdiction, control, and regulation of the commission . . ."⁴⁰

In addition, the Colorado statute says any type of electrical energy supplier, whether co-operative electric association or nonprofit electric corporation, is a public utility and thereby subject to state regulation.⁴¹

The broad sweep of the Colorado statute is sufficient to encompass a MIUS operation.

Although not as all-inclusive, Maryland defines a public service company as: " . . . a common carrier company, gas company, electric company, steam heating company, tele-

phone company, telegraph company, radio common carrier, water company, sewage disposal company, and/or any combination thereof."⁴²

The previous statutes are an indication of the extensive effect a state can have on a utility that seeks to be based within its limits. Conceding the sufficiency of the statutes, the states could very well regulate any type of MIUS operation. If the existing statutes proved ineffective due to the novelty of MIUS, the state would be empowered to enact new legislation that would compensate for any deficiency. The states police power would sustain such regulation and as such would not be amenable to constitutional arguments.⁴³

The Maryland judiciary has upheld the broad regulatory powers of the Public Service Commission of that state.⁴⁴ By statutory mandate,⁴⁵ the Commission is conferred with jurisdiction and power over any public service company operating within the state. If it be concluded that MIUS comes within the definition of a public service company, it would have to conform to the regulations of the Public Service Commission.

The Colorado statute offers a means whereby MIUS might not be subject to state regulation although public in nature. The statute⁴⁶ provides for an exemption from regulation by the commission of municipal utilities. The state constitution⁴⁷ made the initial provision for the exemption

of municipally owned utilities. If municipally owned MIUS would be set apart from the general regulatory agencies although it would presumably have to meet state standards for utility operation.

DUTIES AND LIABILITIES

Traditionally, the task of providing public utility services has been upon municipal corporations or private corporation, for profit.⁴⁸ But as can be seen in many states, cooperatives or associations have been formed to provide public utility services.⁴⁹

Irrespective of the nature of the utility supplier, the law imposes upon such supplier certain duties that are owed to the public it supplies.⁵⁰

The ownership of the MIUS system has not been clearly delineated at this point. But in terms of placing MIUS within a public classification, it is most probable that it will be subject to state regulation and all other concomitant factors. On the other hand, if the MIUS system should be privately owned, it would be amenable to private corporation law.

The duties that a public utility operator must perform are a result of operation of law which vitiates the necessity of any expresses contractual relationship between the supplier and the consumer.⁵¹ Considering the special status of "necessities of life" that has been placed upon utilities by the courts,⁵² it is projected that a breach of these duties will be looked upon in particular disfavor by the courts.

Recent constitutional arguments have been advanced that have had the effect of enlarging the duties that are owed by the utility to the public which it serves. As a necessity of life, the courts have held that the constitutional mandate of due process and equal protection apply to public utilities. A public utility stands in sharp contrast to an unregulated private corporation. It is engaged in a public function that provides necessary services which, in many instances, has been assumed primarily by the government.⁵³

The public-private dichotomy has been recognized by the federal courts. The decisions have placed upon public utilities a characterization of agents of the state engaged in business under color of law.⁵⁴ Since public utilities are agents of the state acting under color of law, they are subject to the requisites of due process of law under the fourteenth amendment.⁵⁵

If MIUS is classified as public in nature, there is every indication that it would have to comply with these new guidelines, as well as the traditional ones. The MIUS system is seeking recognition at a time when the courts are endeavoring to articulate the standard of constitutional protection which is to be extended to consumers of residential utility service. Heretofore, such standards were virtually unheard of. But the trend shows a precise consistency in holding that the constitutional standards

are applicable to public utilities. Therefore, in developing and operating a MIUS system, it should be kept in mind that as a public utility MIUS would be bound by these rulings.

Courts are in general agreement that a utility service is under an implied duty to provide services to all consumers irrespective of whether it be a municipal corporation, association, or private corporation.⁵⁶ This service duty is subject only to reasonable, nondiscriminatory regulations governing eligibility. MIUS as a public utility would be bound by law to serve all members of the public who reside in its franchised area in a reasonable way and without discrimination. If MIUS is a privately owned utility, it would be structured essentially as other corporations that vest management discretion in a board of directors.

The distinguishing feature between a public utility and a private utility is that a public utility hold itself out to the public and as such implies a willingness to serve the public upon equal footing.⁵⁷ However, the services that are offered by the utility must be of such a nature that all members of the public have an enforceable right to demand it.⁵⁸ The duty to serve the public is limited to service in a certain geographic area as defined in the franchise.

In summation, a public MIUS would be obligated to serve all members of the public within its franchised area

and it must be done within a reasonable non-discriminatory fashion.

Duty To Serve Without Discrimination

By the nature of a public utilities business, an obligation arises, that must be exercised without arbitrary discrimination, to furnish its services to the general public, or more conclusively, to the public which it has expressly undertaken to serve.⁵⁹ A public utility must offer the same service to consumers of an identical class who are similarly situated.⁶⁰ Although the rule against discrimination does not prohibit reasonable classification, it does operate to impose like services and charges upon all who are similarly circumstanced.⁶¹ A MIUS system which is treated as a public utility system would come under this duty of service without discrimination. Given the fact that public utilities have the right to enter into contracts between themselves and others, it might be envisioned that a MIUS operator would be allowed to establish varying rates among its customers. Although the courts have recognized this right, it has been further held that utilities have no power to make any contract that would be in contravention of public policy.⁶² Texas courts have held the rule against discrimination to be inapplicable where rates are fixed by contract with the customer.⁶³ The disparity of opinion can be readily seen. Within the New York jurisdiction⁶⁴ alone, the courts are not in agreement as to the applica-

bility of the rule. The following caveat should be imposed upon the MIUS operator in assessing the feasibility of charging varying rates: The law is not settled as to the applicability of the rule against discrimination in charging different rates. But if such is desired, set out clearly, at the inception of the system, by contract the intention to charge customers at different rates.

A distinction between public and private callings has always been recognized by the law as respects service and charges.⁶⁵ Private callings have always been allowed to exercise partiality, unreasonableness, or unjustness in services and charges.⁶⁶ This avenue of partiality is not open to a public calling.⁶⁷ All public service companies, whether they be telegraph and telephone companies,⁶⁸ electric companies,⁶⁹ water companies,⁷⁰ or gas companies⁷¹, are forbidden from showing any partiality among the consumers of its service. The legal duties that are applicable to these public service companies would, in all probability, be applicable to the MIUS system. The proposed nature of the system would bring it within the statutory meaning of a public service company in the selected states and as such the corresponding legal duties would attach.

The obligation to serve without discrimination is statutorially imposed in most states. The substance of the statutes is that all charges for services rendered by a public services corporation shall be just and reasonable

and in accordance with orders or decisions of the appropriate commission or by law; any unjust or unreasonable charge made for the services of water, gas, light, power or heat is forbidden; public service corporations or municipal corporations, who serve the public, are forbidden from collecting or receiving a greater or less compensation for a supply as it collects or receives from any other person or corporation for doing like and contemporaneous service, such practice is forbidden whether directly or indirectly by any special rate, rebate, drawback, or other device or method; and that no public service corporation shall grant any undue or unreasonable preferences or advantages to any person, corporation, or locality.⁷²

Some courts have attempted to define the effect a new law would have upon rates established under terms and conditions of a contract executed prior to the effective date of the new law.⁷³ The Wisconsin court⁷⁴ has held that by following the term as set out in the pre-existing contract, the utility was not discriminating within the meaning of such law. To the utility operator, and a MIUS operator as well, this becomes an important ruling. By statutory mandate, a public utility is forbidden from charging different rates among consumers to whom like services is provided. But if it be established that rates are in conformity to the terms of a contract that was entered into prior to the effective date of a new law chang-

ing those rates, the new law will have no operative effect upon the rates that are being charged.

Classification

As a fundamental evil, discrimination between public service patrons is not forbidden. What the law does frown upon is unjust discrimination.⁷⁵ Giving due recognition to the equality of rights between public service company customers,⁷⁶ such quality does not hinder differences in the modes and kinds of service and the different charges based thereon.⁷⁷

Courts have not held it to be unjust discrimination where a difference in rates was based upon a reasonable and fair difference in conditions which equitable and logically justify a different rate.⁷⁸

A finding of unjust discrimination does not automatically follow just because different rates are charged in different parts of a municipality.⁷⁹ So holding was the case of Collier v. Atlanta.⁸⁰ The court in Collier, upheld the practice of charging a higher rate for water furnished in an outlying district than was charged in the center of the city.⁸¹

Frequently, classification is based on arbitrary or unrelated factors. The results of such classification is unjust discrimination and preferences. The use of the product is never a sound basis for classification and frequently has been condemned.⁸² Nor is the value of the ser-

vice to the consumer a proper means of discrimination.⁸³

The kinds of discrimination that will be allowed have arisen and have been court-tested many times. Therefore, a MIUS operator would be thoroughly put on notice as to what the courts will allow. This area of utility law should present the least amount of difficulty to a MIUS operator.

Flat Rates

The use of flat rates, providing for a certain charge for a given period regardless of how much or little energy is used, is inequitable and an encouragement of waste by the consumer. By rendering services on a flat-rate basis, the utility operator would thus become open to charges of unfair discrimination and constitutional attacks. The flat rate basis allots a maximum charge to the consumer regardless of the amount of the commodity used. This type of charge is most prevalent in water services but may be found in other utility services. Allowing a utility to charge according to a flat rate basis causes consumers to be treated differently. Under such a system, a consumer that utilizes large quantities of a utilities' commodity would pay the same charge for the service as one that uses very small quantities. Thus the smaller consumer would in effect be subjected to a greater rate per unit of consumption.

It must be kept in mind, however, that such method of charging is not per se discriminatory. Courts are always interested in the rationale of the action. If a showing can be made that the method of charging has some rational basis, the courts could very well support the basis.⁸⁴

The decision, by a MIUS operator, as to whether to adopt the flat-rate system would necessarily involve a consideration of the resulting waste by consumers that such system encourages and also a consideration of the likely discrimination charges. It is foreseeable that the adoption of the flat-rate system would vitiate the character and concept of the MIUS system. MIUS offers as a strong selling factor the utilization of its resources in a conservative and efficient manner. This factor would be sacrificed in a flat-rate system. To overcome discrimination charges if the flat-rate method is envisaged, the MIUS operator would probably be on sound footing if something less than a pure flat-rate method is utilized.

Metered Rates

The metered rate system's design exacts charges in direct proportion to the quantity of the commodity that is consumed. Metered rates discourage waste. In the conservation of resources, the metered rate would be in accord with the expressed purpose of the MIUS operator.

When compared with the flat-rate method, metered

rates occupy the most favorable position for the MIUS operator. The metered rate method does not encourage waste and it is not susceptible to discrimination charges.

There has been some disparity of opinion as to whether charging some consumers flat-rates and others metered rates amounts to discrimination when the consumers are of the same class. A majority of decisions say there is discrimination⁸⁵ but the emerging trend looks beyond the fact of varying charges, which is said to be the unlawful discrimination, and focuses upon the reason for the course of action.⁸⁶ The decisions indicate that the charging of flat rates to some consumers and metered rates to other consumers is not necessarily evidence of discrimination. If a MIUS operator is desirous of employing varying methods of charging, there is ample authority for projecting that such will be upheld, providing, and this is what the case will turn upon, there is a showing of a reasonable basis for the action.

Discrimination and special rates

As a general rule, discrimination respecting rates and charges by a public utility is a violation of a public duty.⁸⁷ Nevertheless, where the interest of the public is involved and a benefit will inure to the people generally, discrimination has been favored. Federal courts have said: "It is only when the discrimination inures to the undue advantage of one man in consequence of some injustice inflict-

ed on another that the law intervenes for the protection of the latter."⁸⁸ The Supreme Court has upheld discrimination in favor of the government.⁸⁹ Likewise, state courts have favored discrimination where schools⁹⁰ or charitable institutions⁹¹ are involved. If a MIUS operator served these public institutions at special rates, controlling authority indicate that such would be upheld.

The practice of extending preferential rates to the Federal Government has also been upheld by the state courts as not being an unjust discrimination.⁹² The Supreme Court in California Commissioners v. United States⁹³ held that state statute that empowered public utility commissioners to determine whether or not special rates would be extended to the Federal Government was unconstitutional and violative of the Supremacy Clause where the practice of extending such special rates was sanctioned by federal law and regulation. State regulatory agencies have not shown great enthusiasm in extending the Federal Government special rates.⁹⁴ A MIUS operator could, within the bound of California Commissioners v. United States, extend special rates to the Federal Government without violating any provision that prohibits unjust discrimination.

Liabilities for discrimination

An individual patron or customer of a public utility may sue to enforce his right to services without discrimination. The consumer may sue in his own name⁹⁵ for a breach

duty by the utility company. However, standing as a consumer⁹⁶ is an essential requisite to challenge utility acts. Thus a MIUS operator could be sued by its patrons for alleged discrimination upon a showing of standing as a consumer. Although there are other procedural requirements that must be met before the consumer can actually invoke the power of the courts, the right to sue for aggrieved wrongs is a settled principle.

Where discrimination in rates are charged, the consumer's remedy, in the first instance, lies with the rate-making body and not the courts.⁹⁷ So, before a consumer can attack a rate as being unreasonable in court, he must first secure a decision of the public authority.⁹⁸ Therefore anyone attempting to sue a MIUS operator would need standing as a consumer and would have to exhaust all administrative remedies, if the system is controlled by a public regulatory board, before going to the courts. In some instances, a city is given statutory authority to represent its residents before the commission.⁹⁹ It has also been held that statutes giving a city solicitor power to enforce contracts creating a public duty are not sufficiently exclusive to deny the right of a resident elector and consumer of a public utility to sue.¹⁰⁰

If a consumer has paid improperly demanded rates, he may recover back the sum illegally demanded.¹⁰¹ In a proper case,¹⁰² courts have compelled a refund with interest.¹⁰³

Likewise, a suit for damages is available to the consumer for a wrongful refusal to furnish service or a wrongful cutting off of the service by the utility company.¹⁰⁴

Some municipalities impose a penalty upon the company for its wrongful acts, however, such penalty would not be a bar to a suit by the consumer for damages sustained.¹⁰⁵

The consumers damages may not be limited to actual damages. In the proper case, exemplary damages are recoverable.¹⁰⁶

Exemplary damages are predicated upon a showing that the utilities' act was not only wrong but wanton or wilful.¹⁰⁷

If a MIUS operator is found to have committed discriminatory acts, he would be liable for actual damages and exemplary damages if elements of wantonness or wilfulness are found.

Apart from the remedy at law for damages, a consumer may bring an action for mandamus¹⁰⁸ to compel a public service company to perform its duty of furnishing services without discrimination.¹⁰⁹ A consumer may further compel the public service company to furnish its services at rates prescribed by the state or municipality¹¹⁰ and compel the restoration of service after it has been unlawfully cut off.¹¹¹ All of the preceeding actions are brought by way of the writ of mandamus. But a consumer is not limited to the writ if it proves inadequate. Relief may be granted by a mandatory injunction¹¹² to compel a company to furnish water to a consumer if mandamus is not an adequate remedy.¹¹³

In some jurisdictions, injunction¹¹⁴ is the proper remedy to prevent the cutting off of a supply where the amount due is in dispute¹¹⁵ or where rates are in excess of those lawfully authorized.¹¹⁶

When a public authority fix or approve a rate for the service or product of a public utility, this is prima facia evidence that the rate is reasonable.¹¹⁷ Hence if a consumer should attack the rate as being unreasonable, he has the burden of proving its unreasonableness.¹¹⁸ This factor would be very important to the MIUS operator since the consumer has numerous courses of action he could very well take. Irrespective of the course taken by the consumer, the burden is upon him to prove any assertion of discrimination.

Notwithstanding the general rule that the burden of proving affirmative allegations rests on the part asserting them,¹¹⁹ the powers of the commission may be of such that it can determine which of the litigants will be required, in the first instance, to produce proof on any disputed matter.¹²⁰ A public utility commission may have, under proper statute, the power to require utilities to produce records and documents relevant to matters within its jurisdiction.¹²¹ If a MIUS operator found himself in a position of having to defend a discrimination lawsuit, adequate records that support his position would be an invaluable asset. Considering the fact that the complainant has the burden of

proof generally, the MIUS operator would have an added advantage. Every effort should be made to minimize the possible effect a suit for damages could have. Consumers are becoming more aware of their rights as respect public utilities and courts are placing discriminatory labels on actions of public utilities that heretofore were not considered as such. Public service corporations are being held to a strict performance of their duties to the public. Utility companies are being penalized for breaching that duty by way of large amounts of damages. The MIUS operator should be vigilant of any possible discriminatory acts, thereby avoiding costly suits.

Abandonment of Service

The question of discontinuance of service is one of vital importance to the public and the utility operator. When property is devoted to public use, there is a duty to serve the public.¹²² The public utility must perform this duty or surrender its franchise and privileges.¹²³ Thus the question of discontinuance of service will be of prime consideration to a potential MIUS operator. The dimension of this problem is amplified when one considers that a public utility may be compelled to continue providing service even where losses are occasioned. The impact of the duty to continue service can be properly accessed by comparing public and private utilities.

It is generally conceded that a public enterprise

does not have an unlimited right to withdraw from serving the public.¹²⁴ The obligation to continue service might arise from contract or statute.

A contractual obligation to continue service may be entered into with the state itself, a subdivision of the state, such as a municipality or county, or contracts with private persons. A charter of incorporation, although a contract with the state,¹²⁵ is not sufficient in itself to obligate companies to continue service.¹²⁶ An 1876 Maryland case holds that although a corporation may be engaged in a public service it will be allowed to withdraw where no special privilege had been granted the company to perform its services.¹²⁷ If a company does not contract with a municipality, it has been decided that there is no obligation to continue service by the articles of incorporation alone.¹²⁸

The most viable argument for finding an obligation to continue service arise from the granting of a franchise to engage in a particular business or a franchise to use the streets and highways. If the instrument contains expressed terms requiring continued operation, then the franchise will be considered as being mandatory.¹²⁹

A grant by the state or city of certain special privileges may give rise to implied obligations on the part of utilities to continue service.¹³⁰ One of the most important special privilege is the power of eminent domain.

In State v. Bullock the court said: "By the acceptance of its charter from the state such a company is permitted to exercise certain rights not enjoyed by individuals. It is given certain of the attributes of sovereignty itself such as the power of eminent domain Accordingly, therefore, the public has such an interest in the operation of such a road that, when once undertaken, it may not be discontinued by a proceeding in which the state is not represented."¹³¹

If a public utility is given the privilege to use the highways, as in the erecting of poles and wires,¹³² this would be a privilege different from that accorded the average citizen and as such would imply an obligation to continue service.¹³³

The obligation to continue service is governed by statute in most states.¹³⁴ In states where there is no express law, the obligation to continue operation is implied from certain statutes requiring reasonable service.¹³⁵

An early Texas case held that such statutes were part of the charter of franchise contract if the passage of the statute preceded the granting of the charter or franchise.¹³⁶

When there is no contract or statute expressly requiring continuance and the duty arises via an implied contract, there is not an absolute obligation under all circumstances to continue operation. The largest and most important class of cases on abandonment pertains to utilities

which have been operating at a loss. The Supreme Court said in the Eastern Texas case that concerned railroad abandonment¹³⁷ that a utility is not bound to continue operating at a loss if at any time it develops with reasonable certainty that future operation will be at a loss.¹³⁸

In considering abandonment, courts have drawn a distinction between complete and partial abandonment. When a utility seeks withdrawal of only part of its operation, partial abandonment is involved. Complete abandonment involves a dismantling of the whole operation. Partial abandonment was considered by the Supreme Court in a case where a street railway company sought to abandon less than one mile of its twenty-two miles of line because of street improvements that would have caused additional investments greatly in excess of the daily revenue. The Court said in support of the city's strict interpretation of the company's franchise that a public utility cannot escape obligations voluntarily assumed because of loss.¹³⁹ Apparently, the legal obligation of a utility is accorded great consideration where partial abandonment is concerned.

Financial loss is also the most common justification for allowing total abandonment. To require an entire utility to continue operating at a consistent loss is said to be a violation of the fourteenth amendment of the United States Constitution.¹⁴⁰ When pleading financial loss, there must be evidence that the loss will be permanent,

not temporary. This principle has been construed as meaning that the loss must have either existed for a period of time that will indicate the impossibility of operation at a profit, or that there is no reasonable prospect of future renumeration.¹⁴¹ Since there is a presumption against loss, the company must give reasonable and satisfactory evidence to sustain its plea.¹⁴²

When a utility devotes its property to a public use, it is not free to withdraw that service at its pleasure. Indeed, the courts and regulatory bodies have not looked upon attempts to withdraw favorably. Petitions to withdraw are closely scrutinized by the regulatory commission. In deciding whether to allow the utility to abandon, the regulatory commission must weigh competing interest, that of the consumer and the utility. A MIUS system, serving in a public capacity, would most likely come under the same type of stringent controls as the conventional system in relation to abandonments. Although a decision by the MIUS operator to devote his property to public use is not irrevocable, the mechanics of obtaining a release are of such an intricate nature that the operator should not enter the public domain without being sincere about remaining in business.

The obligation to continue service is binding upon a subsequent purchaser of the utility. Therefore, a sale of the MIUS system by the original operator to another would

not negate the obligation to continue service. This obligation would also continue in a lessee¹⁴³ or assignee¹⁴⁴ of the MIUS system. The same public interest in continued operation as existed in the hands of the original operator remains upon transfer to a subsequent.¹⁴⁵ The purchaser would not be relieved of such duty even where there was no intention to continue operation.¹⁴⁶

Abandonment and the accompanying liabilities are viewed in a different fashion if the MIUS system is defined as private. If the system is operated as a private system, state regulatory agencies would not have to be consulted for permission to abandon or discontinue a service or a portion thereof. In Sun Prairie v. PSC, the Wisconsin court held that a utility system was beyond state regulation where the owner of a multiple apartment complex supplied its tenants services of gas and electricity that was generated from an on-site owned and operated system and the services were limited to the tenants on the premises without making any separate specific charge in the rent for such services.¹⁴⁷ In instances where the commission does not have jurisdiction to safeguard the interest of the consumer, measures must be employed by the consumer himself to ensure continued service. The contract offers a means whereby a patron of a private utility could protect his interest in continued service. MIUS as a private system would be bound by contractual obligations with a

consumer and hence liable for any breach thereof in accordance with contract law. One of the real inequities found in the contractual arrangement can be readily seen when the bargaining position of the parties is considered. A MIUS operator might not agree to enter into a contract that would bind him to supply services for a protracted length of time and that would have the added effect of giving the consumer a cause of action for breach if the operator failed to deliver the services. On the other hand, the consumer's interest in continued service is sufficiently characterized by the degree of tenacity in demanding assurance that the service will not be abruptly withdrawn.

Liabilities from Cessation of Service

A consumer that has been injured by a wrongful act of a utility may apply to the appropriate agency for redress of that wrong. A utility company is liable to its patrons for an unlawful abandonment and failure to provide services in accordance with orders of the commission. Where there is a violation of commission orders, most statutes assess a fine as a penalty. The penalty can be assessed against either the culpable utility¹⁴⁸ or its officers,¹⁴⁹ or both.¹⁵⁰ Some laws provide for incarceration as a possible penalty where the violator is an officer or agent of a utility.¹⁵¹ But the assessing of a criminal penalty has been of little

value in effectuating the goal of improved service. Apart from its deterrent effect, it has proved to be an inappropriate weapon for enforcing utility laws.

The equitable remedies of mandamus and injunction are more effective methods of enforcements. Where these remedies are sought, application must be made to the courts,¹⁵² as a purely administrative body, such as a public service commission, has no power to issue injunctions.¹⁵³

As a means for providing relief to the injured consumer, private actions for damages or mandamus are the sanctions that often prove most useful against the utility. In many states the damage suit is given statutory approval as means of enforcing utility laws.¹⁵⁴ Some statutes even confer civil liability for failure to comply with commission orders.¹⁵⁵ An award of exemplary damages is proper for willful violation of commission orders.¹⁵⁶ In instances where the damage action is inadequate, mandamus may be available to a private citizen to compel restoration of services wrongfully denied him.¹⁵⁷

Unintended Interruptions or Failures

A problem relating to the utility's duty to the public generally is presented by involuntary interruptions of service. Interruptions caused by storms, hurricanes, bolts of lightning, or other acts of God that are beyond the utility's control will relieve the utility for a period

reasonable necessary for the restoration of service.¹⁵⁸

If a MIUS operator suddenly found himself without sufficient power or a complete lack of power to serve his patrons due to an act of God, it appears that this would be a legitimate reason for failing to serve and thus no resulting liabilities. On the other hand, it has been recognized that liability to a consumer for unintended interruptions of service may be based on negligence on the part of the supplier causing the interruption. Courts have held that the underlying basis of the supplier's responsibility was founded upon either a contract with the patron or a regulatory enactment and that in the absence of a stringent contractual or regulatory provision, a showing of negligence on the part of the company is necessary in order to establish its liability.¹⁵⁹

In an Arkansas case, the court held a power company liable for damages incurred by the plaintiff during an interruption of service because of a short circuit from want of proper inspection of its wires. The court recognized that no liability would have attached if the interruption had been caused by external forces outside the control of the company which were not reasonable foreseeable.¹⁶⁰ From an interpretation of case law, one could conclude that a MIUS operator would be liable for its negligent acts that caused an interruption but would not be liable for damages caused by external forces which were not reasonable foreseeable.

Early decisions have supported the principle that a utility company will be liable for damages that occur from an interruption of service where the utility fail to take reasonable precautions to anticipate the situation.¹⁶¹

In a 1968 decision, the ninth circuit held that a rail carrier was liable for failing to serve its patron where negligence was shown even though an act of God was plead.¹⁶² The case concerned an action by a shipper who sought damages against a railroad company after the company refused to carry shipper's lumber because of a tunnel cave-in on a branch line. The railroad pleaded Act of God as an excuse for failure to serve. The court held that the company was liable since it failed to show that it did everything in its power to transport the lumber tendered since it negligently failed to anticipate the cave-in. The court further held that liability will flow where there is negligence mingled with an excepted cause.¹⁶³

Generally, courts have imposed liability for interruption of service even in the presence of a contractual provision exempting the utility from liability for such interruption. Such a provision is regarded as being a violation of public policy.¹⁶⁴ A MIUS operator would be subject to this principle also. The operator could not rely upon a contractual provision that purported to exempt him from liability for interruptions of services caused by his own negligence.

One recent decision considered the question of whether a utility can, by an exculpatory clause, free itself from liability for gross and willful negligence. In Burton Leasing Co. v. Hackensack Water Co.,¹⁶⁵ the water company included such a clause in its application forms which were required to be signed by the customer in order to receive service. The clause stated that utility was excused "not only from such things as acts of God, circumstances over which it had no control and ordinary negligence, but also from gross and willful negligence." The customer objected to the clause and the New Jersey Board invalidated the clause holding that the utility's attempt to exculpate itself from gross and willful negligence was not only invalid but contrary to public interest.

If a consumer should predicate an action for damages resulting from a negligent temporary interruption of service solely on a statute penal in nature, misconduct grosser than mere negligence must be established in order to fix liability.¹⁶⁶ But a judgment can be based on a finding of ordinary negligence even though the complaint alleges gross negligence since the allegations encompassed a failure to exercise reasonable care.¹⁶⁷

Liability on the part of power suppliers has been established in several cases involving delays in restoration of service after unintended interruptions.

Although reversing on other grounds, the Alabama

court recognized the utility's liability for damages in negligently failing to restore current in a reasonable time.¹⁶⁸ Courts of other jurisdictions¹⁶⁹ have held, as did the Alabama Court, that a company is liable for damages resulting from a delay in restoring service. A MIUS operator should understand that failure to restore service within a reasonable time after interruption is sufficient grounds for finding liability even in the absence of a negligent act as the producing cause of the actual interruption.

Inadequacy of Power

A number of cases have recognized the liability of a power company for damages to a consumer as a result of inadequate power. Liability has been predicated, at least in part, upon a theory of negligence,¹⁷⁰ express contract,¹⁷¹ and implied contract.¹⁷² In cases of this sort, services have not been cut off or failed completely, but there is an inadequate supply to meet the demands of the consumer. Since case law indicates that liability can be predicated upon contract, a MIUS system private in its construction could be adjudged liable for supplying inadequate service. In the absence of an expressed contract, liability can be based upon an implied contract. It has been held that where a utility is familiar with the use its customers make of electric current, the utility is under an obligation to supply a sufficient voltage to take reasonable care

of the customer's usual purposes, on the theory of implied contracts.¹⁷³

Courts generally hold that a utility is under a duty to provide either adequate or sufficient service as dictated by the customer's needs or expressed in a contract of service. For failure to so perform, liabilities will attach. A MIUS operator would find himself under the same duty and of course liabilities for non-performance. In determining whether this duty had been performed, the reasonable adequate test would be applied. Where there is a contract between the MIUS operator and its patron, the instrument will be examined in order to ascertain whether there had been compliance with its terms.

Deliberate Shutoffs

Generally, courts have imposed liability upon electrical suppliers for damages to a consumer for the deliberate suspension of power, where that suspension was arbitrary and capricious and without justification.¹⁷⁴ Exceptions have been allowed in cases where shutoffs were made in emergencies¹⁷⁵ or in connection with misconduct of patrons.¹⁷⁶

Although the courts are in general agreement that a power company may deliberately suspend or interrupt the flow of current without incurring liability where certain emergencies exist which dictate shutoff, the Alabama court has held that the public utility might owe a duty to the consumer to co-operate in maintaining a continuous service

to the customer where a public utility based a discontinuance upon the ground that the switches and equipment in the patron's residence were obsolete and hence dangerous.¹⁷⁷

There are numerous cases dealing with the liability of a company for deliberately interrupting with a patron's service because the patron tampered with a meter or other such registering device. The decisions run in favor of allowing the supplier to remove the meter in order to protect itself against fraud or abuse.¹⁷⁸

In case of metering tampering or any other justifiable reason, a MIUS operator could suspend service to its patrons. However, the operator would have the burden of proving the necessity of its action. Upon sustaining this burden, there would be no liabilities and no ground for holding the MIUS operator accountable for damages that occur.

Upon a showing that a consumer has been wrongfully denied services by the utility, the consumer is entitled to damages. However, the question as to what is the correct measure of damages has been a major subject of inquiry. In determining the measure of damages for wrongful shut-off of water service, the Pennsylvania Superior Court limited the liability of the water utility only to injuries that were the natural and probable consequence of the wrongful act, "such a consequence as under the surrounding circumstances of the case might have been foreseen by the

wrongdoer as likely to flow from his act."¹⁷⁹ Under such a standard, damages for an aggravated heart condition arising from exertion of carrying water jugs to a spring, and for mental and psychic suffering are not allowable.¹⁸⁰

If a MIUS operator was placed in the precarious situation of having been adjudged liable for damages, there might be some consolation in knowing that the extent of recoverable damages have been sharply delineated. Liability would extend only to those injuries that were the natural and probable consequence of the wrongful act.

FEDERAL REGULATIONS

Federal Power Commission

The Federal Power Commission (FPC) is a federal agency that the MIUS developer might come in contact with due to its jurisdiction under the Federal Water Power Act.¹⁸¹ The Commission has jurisdiction to issue licenses for the construction and operation of dams and other hydroelectric power projects on navigable streams, or upon the public lands or reservation, of the United States.¹⁸² The FPC is further vested with jurisdiction over the transmission and sale at wholesale of electric energy in interstate commerce.¹⁸³ The statutes clearly set out that in respect to non federal projects, jurisdiction is properly invoked if a public utility is engaged in the transmission of electrical power in interstate commerce or if hydroelectric projects are planned and constructed on waters or lands subject to federal jurisdiction.

The paramount right of the federal government to maintain navigable waters free and unobstructed was established early by the Supreme Court.¹⁸⁴ Whether rivers are navigable and whether hydroelectric developments on the non-navigable tributaries of navigable waters will affect the navigable capacity of those waters are fact questions over which rests the jurisdiction of the federal government.

The Supreme Court, in the case of United States v. Appalachian Electric Power Co.,¹⁸⁵ strengthened the authority of the FPC conferred under the Water Power Act in regards to the navigability concept. The Court in Appalachian held a 111 mile stretch of the New River from Allisania to Hinton across the Virginia-West Virginia boundary to be navigable water of the United States requiring a FPC license before a utility could construct a hydroelectric dam in the stream. The Court found a lack of commercial traffic would not bar a finding of navigability where personal or private use by boats demonstrates the availability of the stream for the simpler types of commercial navigation.¹⁸⁶

The Court said: "We are dealing here with the sovereign powers of the Union, the Nation's right that its waterways be utilized for the interests of the commerce of the whole country. It is obvious that the uses to which the streams may be put vary from the carriage of ocean liners to the floating of logs; that the density of traffic varies equally widely from the busy harbors of the seacoast to the sparsely settled regions of the western mountains. The tests as to navigability must take these variations into consideration."¹⁸⁷ The Court recognized the right of the utility to make use of the riparian lands, water and river bed as obtained under state law, but also noted that both the utility and the state held the waters and lands subject to the power of congress to control the waters for the

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purposes of commerce.¹⁸⁸

For purposes of conferring jurisdiction, navigability has been defined in extremely broad terms.

In First Iowa Hydroelectric Cooperative v. FPC,¹⁸⁹ the full scope of federal superiority emerged in a holding by the court that FPC licensing was not conditioned upon compliance with state procedures. In spite of an expressed provision of the Federal Power Act directing applicants to submit evidence of compliance with state law,¹⁹⁰ the Supreme Court held the obtaining of an Iowa permit was "not in any sense a condition precedent or an administrative procedure that must be exhausted before securing a federal license."¹⁹¹

At the heart of the Federal Water Power Act is its provisions pertaining to licensing. The Commission issues three types of licenses: the preliminary permit,¹⁹² the standard license,¹⁹³ and the minor-part license.¹⁹⁴ Where the project may affect the navigable capacity of any navigable water, the developer must submit plans to the Chief of Engineers and the Secretary of the Army for approval,¹⁹⁵ and, if the development involves the use of public lands, there must be a finding that the project will not be inconsistent or interfere with the purposes for which the public lands or reservation exists.¹⁹⁶

The FPC has authority to condition licenses issued under the Act.¹⁹⁷ One such condition is that each license which is a public utility is required to accept regulation

of rates and services by any duly constituted state authority. Transactions that are in interstate commerce and beyond the jurisdiction of any state body are subject to the jurisdiction of the Commission for rate regulatory purposes.¹⁹⁸ Likewise, the Commission is empowered to exercise similar control where no state commission exist in a particular state or where states having jurisdiction are unable to agree with respect to service, rates, or security issues of the license.¹⁹⁹ The chances of FPC regulation of a MIUS facility are considerably great. Locating the facility within the State of Texas would elevate such chances to an optimum level.

Environmental Protection Agency

The MIUS developer should be aware of the Environmental Protection Agency (EPA) because of its jurisdiction under the Federal Water Pollution Control Act as amended in 1972.²⁰⁰ The Agency is charged with the prevention, reduction and elimination of pollution of the navigable waters and ground waters of the Nation and with improving the sanitary conditions of surface and underground waters.²⁰¹ Primary responsibility for effectuating standards set forth in the Act is given to the states.²⁰² But the federal government must approve all state programs²⁰³ and it can initiate enforcement actions against polluters when the states cannot or will not adequately protect against water

quality deterioration.²⁰⁴

A MIUS developer should be particularly aware of the provisions of this statute. Considering its jurisdiction over pollution abatement of navigable waters, and under most construction, most rivers in the country are navigable waters.²⁰⁵ A MIUS system will at some point utilize such waters and will be restricted in the level of effluents discharged. Jurisdiction is further enhanced in that the EPA can establish intrastate water standards upon the failure of the states to do so.²⁰⁶

The provisions of section 1320 of the Act may be of special importance to a MIUS facility located in the State of Texas. The Act gives authority to the Administrator to commence pollution abatement proceedings against a State upon the request of the Secretary of State where pollution is occurring which endangers the health or welfare of persons in a foreign country.²⁰⁷ The operativeness of this section depends, however, upon whether such foreign country has afforded the United States similar reciprocal protection.²⁰⁸ Any person allegedly causing or contributing to the pollution must file a report to the board setting out the kind and quantity of such discharge. For failure to do so stringent penalties are imposed.²⁰⁹ Due to the geographical location of Texas in relation to Mexico, the State and a MIUS facility could conceivably be affected by the provisions of this section.

In conjunction with its function under the Water

Pollution Control Act, the EPA is vested with management of of Solid Waste Disposal.²¹⁰ The EPA's Office of Solid Waste Management actively promotes solid waste disposal innovations. Recognizing that improper methods of disposal of solid waste contributes to air and water pollution and the general degradation of public health,²¹¹ solid waste demonstration grants and technical aid is offered to municipalities in order to improve and plan better waste collection and disposal systems.²¹² A municipal MIUS system could qualify for such a grant upon an approval of its planned program. The Agency has shown increased interest in resource recovery or recycling facilities. A recent attempt to put recycling on a more favorable footing than traditional disposal methods was evidenced in the Presidents' 1972 Environmental Message. Therein, the Treasury Departments' Internal Revenue Service (IRS) was directed to clarify the availability of tax exempt industrial development bonds for recycling facilities. The IRS ruled that private firms could make use of tax exempt municipal bonds to finance facilities to recycle and dispose of municipal wastes.²¹³ The ruling will allow for tax exempt status to be applied to the bonds where a minimum of 65 percent of the material recycled is solid waste.²¹⁴ The ruling could be very important to a MIUS developer. Since the Solid Waste Disposal Act limited grant assistance to state and local governmental entities, a private MIUS facility would not have the advantage of subsidies and economic

incentives for developing a recycling system. With the ruling, its plausible that a private MIUS operator could take advantage of the favorable treatment offered for developing facilities to dispose of municipal waste.

Air Pollution Control

The primary source of air pollution is combustion, whether in an effort to produce energy or dispose of refuse. The control of pollution depends on the setting of standards for pollution discharge and enforcement methods for assurance of observance. The Clean Air Act,²¹⁵ is the major vehicle for the protection of the Nations Air resources. The Administrator of the EPA is charged with coordination of activities by state and local governments for the prevention and control of air pollution.²¹⁶ The Act allows each State to implement, maintain and enforce air quality control standards on the approval of the Administrator.²¹⁷

A MIUS developer, although answerable to the State as to adherence to state standards or a violation thereof, could nevertheless come into contact with the Agency upon a failure of the state to effectively implement and carry out standards of air pollution control.

Securities Exchange Commission

The Securities Exchange Commission (SEC) has broad authority over public utility holding companies and their subsidiaries. This authority was conferred upon the Commission

via the Public Utility Holding Company Act.²¹⁸ The Act defines "holding company" as any company owning or controlling ten percent or more of the voting securities of a company that generates, transmit or distribute electric energy or distribute gas, and it also covered subsidiaries, associates, affiliates, service companies and others.²¹⁹

The Act requires each regulated holding company to limit its operation to a "single integrated public utility system."²²⁰ An integrated utility system, as applied to electric utility companies, is a system whose utility assets "are physically interconnected or capable of physical interconnection and which under normal conditions may be 'economically operated' as a single interconnected and co-ordinated system confined in its operations to a single area or region, in one or more States, not so large as to impair (considering the state of the Act and the area or region affected) the advantages of localized management, efficient operation, and the effectiveness of regulation."²²¹ The Commission will allow, however, the retention of one or more additional systems if the following conditions are satisfied:

"(A) Each of such additional systems cannot be operated as an independent system without loss of substantial economics which can be secured by the retention of control by such holding company of such system; (B) All of such additional systems are located in one State, or in adjoining States, or in a contiguous foreign country; and (C) The continued com-

bination of such systems under the control of such holding company is not so large (considering the state of the art and the area or region affected) as to impair the advantages of localized management, efficient operation or the effectiveness of regulation."²²²

It is the Commissions position that the Act does not permit the combining of gas and electric utility properties into a single integrated system.²²³ This position is not however detrimental to the MIUS concept. A literal interpretation of the statute indicates that the term "integrated utility system" as used by the SEC has a different conceptual meaning to MIUS designers. Furthermore, the Public Utility Holding Company Act does not provide for the inclusion of sewage, solid waste disposal and water systems into its concept of a single integrated system. In order to retain gas and electric utilities under common control, one system of properties must constitute the principal "integrated public utility system," while additional integrated systems will be disallowed unless the conditions of section 11(b)(1) are met.

Determining how a MIUS system will be regulated is going to be the most crucial aspect of operating the system. The federal agencies that have been closely examined are by no means exclusive. There is the possibility of the Atomic Energy Commission giving regulatory input if nuclear energy is contemplated at some point. A MIUS system that is regulated by a particular agency must operate according to the standards

and policies of such agency. Failure to comply will cause judicial sanctions to be imposed that will not only be an inconvenience to the operator but also costly, in the form of monetary penalties.

STATE REGULATIONS

Justification for regulation by a state of a privately owned public utility is predicated upon public welfare, which a state is obligated to protect and can so protect through the exercise of its all-inclusive police power.

It is the practice of a majority of the states to delegate such regulatory power to state commissions.²²⁴ Such state commissions are endowed with broad regulatory powers extending to all public service companies operating a utility business in the state.²²⁵ With few exceptions,²²⁶ public utility commissions have been established by state legislatures to supervise and regulate public utilities.

This study will examine the regulatory structure of the states of Texas, Colorado, and Maryland in order to ascertain the legal treatment of a MIUS system in those states.

Texas

Any utility system (MIUS system) desiring location in the State of Texas will be faced with a peculiar set of circumstances as to regulation. Texas statutory law does not have a provision for state regulation of public utilities. In fact, it is the only state without state regula-

tion of telephone operations and is one of only three, along with Minnesota and South Dakota, that does not regulate electrical utilities.²²⁷

The Texas legislature has recognized the problems and abuses that arise from the absence of a state commission for regulation of public utilities. As of this writing, the Senate Subcommittee on Consumer Affairs is considering the feasibility of creating a state utility commission.

The issue of public utility regulation in Texas is highly controversial. Plans for state regulation have been attacked by the major utilities and some state legislators. Nevertheless, momentum has been building toward the creation of a commission. The subcommittee chaired by State Senator Ron Clower has been holding a series of hearings throughout the state in an effort to gather information for possible legislation.

During the hearing in Houston, Houston Mayor Fred Hofheinz submitted a proposal for the creation of a state utility commission.²²⁸ It has been suggested by the subcommittee chairman that the Hofheinz plan would probably become a basis for legislation.

The proposal calls for a commission with authority to develop uniform definitions of fair value and fair return;²²⁹ a commission composed of members that will assure "improvement of the quality of service, protection of the environment, conservation of resources, and ... continued

financial health of the regulated utility";²³⁰ and for some members of the commission to consumer problems.²³¹

The Mayor further proposes that utility rates should be initially set by the municipality²³² with the right of full administrative appeal available to an aggrieved party.²³³

It is projected, that at the reconvening of the state legislature, the issue of a state utility commission will be brought before the entire body in the consideration of creating a state utility commission for Texas.

Although the MIUS system would not be subjected to regulation from a state commission, the system would not completely escape regulation.

Presently, it is the responsibility of local government to regulate public utilities in Texas. This is done under the provisions of the Home Rule Charter.²³⁴ Based upon this charter, incorporated cities with a population of more than 5,000 are entitled to home rule and are authorized "to prohibit the use of any street, alley, highway or grounds of the city by any telegraph, telephone, electric light, street railway, interurban railway, steam railway, gas company, or any other character of public utility without first obtaining the consent of the governing authorities... To determine, fix and regulate the charges, fares or rates of any person, firm or corporation enjoying or that may enjoy the franchise or exercising any other public privilege in said city . . ."²³⁵

The right of the State of Texas to delegate regulatory authority to municipal governments has statutory sanction.²³⁶ It is generally held that the delegation of this authority is upheld on the bases of the state's police power. Thus, a utility company would be ill advised to challenge the right of municipalities to exercise regulatory authority.

City of Houston

As pointed out previously, regulation of public utilities in Texas is strictly a local function. Home rule statutes empower cities to regulate any character of public utility operating within their limits. Hence, the regulatory scheme of the City of Houston has been chosen to illustrate how public utilities are regulated and how a MIUS system operating within the city would be affected.

Naturally, before a company becomes susceptible to city regulation it must come within the definition of a public utility. Texas defines a public utility as any private corporation doing business in Texas having the right of eminent domain and engaged in the business of generating, transmitting or distributing electrical energy, producing, transmitting or distributing natural or artificial gas or furnishing water to the public.²³⁷ In addition, any state agency, subdivision or municipality that furnishes such services is a public utility also.²³⁸

The statutory provision that gives home rule cities authority to regulate public utilities contains an enumeration of specific utilities that are to be regulated by said cities. Contained therein are the following companies: telegraph, telephone, electric light, street railway, inter-urban railway, steam railway, gas company, or any other character of public utility.²³⁹

The foregoing statute evidences the broad categories of public utilities that the City is authorized to regulate. Texas statutory public utility law is sufficient to comprehend the operation envisaged by the MIUS system.

Department of Public Service

A franchised privately owned public MIUS system operating in the City of Houston would be under the supervision of the Department of Public Service.²⁴⁰ The Department has the power to assure that public utilities under its supervision render adequate, efficient, safe and reasonable services at reasonable rates.²⁴¹ It is further empowered to direct improvements in the service being rendered by a utility, to consider and approve or disprove any change, alteration or extension of any service rendered that is proposed by a utility.²⁴² The Department is also charged with the "inspection and supervision of the rates, fares, tolls and charges collected from the public by such utilities."²⁴³

The Department of Public Service is expressly prevented from exercising its powers in regard to entirely city owned utilities.²⁴⁴ Municipally owned systems are regulated by the municipality and the charges and rates for services furnished are made therein.²⁴⁵ A municipally owned MIUS system would likewise experience regulatory controls from the municipality instead of the Department of Public Service.

Franchises

Before a utility company is allowed to render its services in the city, a franchise must be obtained. The legislative department of the government is the source of the grant of a franchise,²⁴⁶ and the City Charter provides for the submission of the application to a referendum vote.²⁴⁷

The city is entitled and required to grant a franchise or permit for extending services only where such is required for public comfort, convenience and necessity.²⁴⁸ A new company, as MIUS would be, seeking to enter a territory serviced by an existing utility would have to show that public necessity and convenience demands the approval of his application.²⁴⁹ MIUS would be afforded a hearing in order to ascertain the merits of the presented application and would have the burden of proving necessity.

The City has no authority to grant an exclusive franchise.²⁵⁰ Since present utility companies are holders

of non-exclusive franchises, MIUS would not be precluded from submitting an application for the rendering of like services of an existing company. The Texas legislature has declared monopolies to be contrary to the public policy of the state; and it is therefore unlawful for a company to do any act designed to prevent or hinder any legitimate competition in the business of furnishing utility service.²⁵¹ The granting of a franchise to the MIUS system would give it a right to exist and compete even though pre-existing companies are servicing the same franchised area.

The MIUS operator should be mindful of the fact, however, that failure to acquire complete authorization from the City to operate establishes ground for attack even from a non-exclusive franchise utility holder.²⁵² It cannot be over emphasized that MIUS must comply with all city regulatory factors not only for the prevention of potential attacks but also for its own protection.

The Texas Court of Civil Appeals has held that when a water district, without authority of law, enters a municipality to carry on business, it operates as a private utility in its operations there and is subject to regulation by the municipality as any other utility.²⁵³

The policy against monopolies also extends to water utilities and sewerage utilities. Ownership of water utilities is generally in the municipality. The trend seems to be toward total municipal ownership.²⁵⁴ This is also true

of sewage utilities. But present law does not indicate that MIUS would be precluded from rendering these services.

A MIUS water company would be required to report to the State Comptroller of Public Accounts for payment of the gross receipts tax.²⁵⁵ The only means of escape would be if MIUS served unincorporated areas. This provision is applicable only to companies operating within incorporated towns or cities with a population of 1,000 or more. Thus a Houston based MIUS water company would come within the scope of the Article.

Transfer of Franchise

The grant of a franchise to a named company and "its successors and assigns" carries with it the right to transfer same without the consent of the city.²⁵⁶ MIUS as an assignee could not be ousted by the City, if the duties under the franchise were being discharged, since such action would be in contravention of the assignee's constitutional rights.²⁵⁷ Should a transfer occur, the MIUS operator should be careful to ascertain all obligations and conditions attendant to the franchise. A subsequent holder will be required to perform in accordance to the terms of the franchise.

Department of Public Works

As previously seen, a franchise grant from the City of Houston brings a utility company within the purview of

the Department of Public Service. Another City agency that MIUS should be aware of is the Department of Public Works.²⁵⁸ The department has the authority to ensure that buildings are not being serviced by defective and dangerous wiring systems²⁵⁹ and to ensure that electrical transmission lines are not improperly constructed. A MIUS system would have to be in conformity to all standards proscribed by this department.

Zoning

Basically, zoning is a process to be accomplished on the local level.²⁶¹ A MIUS system located in the City of Houston will not encounter any constraints attributable to zoning regulation. The City has no ordinance that sets forth specific restrictions on the uses that may be established on any property. Unless the property is subject to an enforceable restrictive covenant limiting its use, the City is unconcerned and removed from the use made of the property.

The decision as to whether or not to adopt a zoning ordinance has been put to the voters twice in the City of Houston. On each occasion, voters have rejected adopting zoning regulations.²⁶²

It appears that if the City did have such regulation, public utilities would not be excepted from its provisions. A recent civil appeals decision has held that a public utility's power of eminent domain is not superior to the zoning

ordinance of a home rule city as an abstract principle.²⁶³

At this point, MIUS would not be hampered by municipal zoning in Houston.

Nuisance Laws

Cities functioning under home rule²⁶⁴ have been delegated the power to define, limit and prevent nuisances.²⁶⁵ Early Texas case law held that nuisance means annoyance.²⁶⁶ The term has been defined legally, in a broad fashion to mean anything that works injury, harm or prejudice to an individual or to the public.²⁶⁷ Acts and conditions that are illegal when the perpetration or maintenance of them invades the rights of others are nuisances per se.²⁶⁸ An example of a nuisance per se would be the pollution of water. Cities have statutory authority to prohibit the pollution of streams which may constitute the source of water supply,²⁶⁹ but the City of Houston is not among the cities that have in fact drafted some sort of inspection schedule or enforcement mechanism pursuant to its statutory power.

The location of waste disposal plants continues to be a major source of litigation. The Courts have consistently held that the location of a sewage disposal plant near a private residence does not constitute nuisance per se.²⁷⁰ Again, the City of Houston does not have any specific nuisance laws.

Texas Water Quality Board

In 1967, Texas adopted the Texas Water Quality Act.²⁷¹ The Texas Water Quality Board was created pursuant to the Act²⁷² and empowered to adopt standards for all Texas Waters.²⁷³ This regulatory agency will be a concern to MIUS because of its responsibility for water pollution control in Texas.

Prior to the formation of a separate water quality control board, the Health Department was responsible for conducting the State's water pollution efforts.²⁷⁴ Creation of the water quality control board did not completely usurp the authority of the Health Department but it did curtail some of its activities. Similarly, other state agencies that were engaged in water quality activities were allowed to remain, thereby dispersing the states' pollution control efforts among various state agencies. This division has hampered the effectiveness of pollution control in the state. A MIUS operator should carefully ascertain the facets of control that would be applicable to his situation.

The provisions of the Water Quality Act make discharges of sewage, municipal waste, recreational waste, agricultural waste, or industrial waste illegal unless authorized by the Texas Water Quality Board.²⁷⁵ The fact that the discharge does not cause pollution is irrelevant. Authorization to discharge waste is evidenced by a permit. The permit is a license to discharge a specific kind and

quantity of waste which the Board has determined will not result in pollution. Every individual, municipality, or industry that discharges waste in Texas waters must obtain a permit.²⁷⁶ The permit is obtained by applying to the Board setting out relevant information about the proposed discharge. The application is then reviewed to determine the exact permissible level of discharge. If approved, discharges can be made in accordance with standards of the permit. Even after approval, the permit is subject to change by the Board.

The statute²⁷⁷ provides a method of appeal to the applicant who has been denied a permit. The appeal is made to the district court of Travis County under the substantial evidence rule.²⁷⁸

Enforcement of the provisions of the Act is vested in the Water Control Board and the Attorney General's office. The Water Control Board attempts to regulate pollution through cooperative action. The Attorney General resorts to legal remedies when persuasive means of enforcement proves fruitless. Here, compliance is achieved through the use of restraining orders, injunctions, and monetary penalties of both a civil and criminal nature.

Solid Waste Disposal Act

Efforts of the state to regulate and solve the problem of solid waste disposal were revealed by the passing

of the Solid Waste Disposal Act.²⁷⁹ Under the Act, the Water Quality Board is given the responsibility for the control of industrial solid wastes and the Health Department is responsible for controlling municipal solid waste.²⁸⁰ The control of air pollution problems caused by burning solid waste is placed in the Air Control Board.²⁸¹ The Act gives authority to deal with solid waste disposal to three separate agencies and local government.

Local Control

The problem of waste treatment has been a problem common to virtually all of the cities. The financing, construction, and maintenance of sewage treatment facilities²⁸² has been the problem in providing this all important service. In terms of financing, the statutes authorize the issuing of general or revenue obligation bonds,²⁸³ mortgaging improvements to the system,²⁸⁴ collecting service charges,²⁸⁵ and the levying of special assessments²⁸⁶ is authorized in some cases. These methods of financing are only available to municipal improvements, therefore, in terms of ownership a MIUS would be at an advantage if municipally owned because of access to these self help methods of financing. In addition, a municipally owned MIUS could get financial assistance from the state for the construction of waste treatment facilities.²⁸⁷

A municipal waste treatment facility would be under the scrutiny of the health department to insure compliance

with state requirements. Although cities are giving statutory authority to inspect and enforce state standards, the task has been under-taken on a small-scale and some cities, notably Houston, have no active program of enforcement.

Maryland

The regulation of public service companies is placed in the hands of a Public Service Commission in the State of Maryland.²⁸⁸ State statute defines a public service company as "a common carrier company, gas company, electric company, steam heating company, telephone company, telegraph company, water company, sewage disposal, and/or any combination thereof."²⁸⁹ The comprehensiveness of the statute is sufficient to bring MIUS within its scope. A literal reading indicates that the mere furnishing of either of the services named will cause a company to be classed as public service. Early cases²⁹⁰ held that the purpose of the statute was to place all corporations handling public utilities under the supervision and control of the commission.

The Commission is given broad liberal powers.²⁹¹ and it is endowed with incidental powers that are necessary and proper to effectuate the provisions of public service law.²⁹² If the Commission should encounter some aspect of the MIUS system that it is not expressly empowered to supervise, it could rely upon its incidental powers to so supervise if to do so is necessary to carry out the provision of state law.

Franchises

As with most commissions, the Maryland Public Service Commission has no power to grant a franchise.²⁹³ The com-

mission's powers cover the exercise, abandonment or transfer of franchise,²⁹⁴ but it does not include either the granting or withdrawal of franchises.²⁹⁵ The power to grant a franchise is a legislative function.²⁹⁶ Only the legislature or a municipal corporation, to which that power has been delegated may grant a franchise.²⁹⁷

Before a company can commence construction of a generating system or overhead transmission line designed to carry a voltage in excess of 69,000 volts²⁹⁸ or water system or sewage disposal system,²⁹⁹ it must have the authorization of the commission. Authorization to construct electric transmitters is given in the form of an issuance of a certificate of public convenience and necessity.³⁰⁰ Therefore a MIUS system would be prohibited from constructing a generating station or transmission lines carrying an excess of 69,000 volts without first obtaining a certificate of public convenience and necessity for the Commission. In determining whether or not to approve the application, the Commission holds public hearings with the local governing bodies of the area concerned³⁰¹ and considers the following: "the recommendations of such governing bodies, the need to meet present and future demands for service, effect on system stability and reliability, economics, esthetics, historic sites, and, when applicable, the effect on air and water pollution."³⁰² A MIUS would have the burden of proving that public necessity and convenience requires the approval

of his application.

Similarly, prior authorization of the commission is necessary to begin construction of a water system or sewage disposal system for public use.³⁰³ Authorization depends upon a finding by the Commission that to do so is in the public interest.³⁰⁴ The Commission considers the plans for financing the proposed construction and other pertinent facts and circumstances in determining whether the approval of the application is in the public interest.³⁰⁵ Municipalities, sanitary districts, or other governmental agencies do not have to secure prior authorization of the commission.³⁰⁶ Likewise, an individual or a group of individuals, whose purpose is for personal or private use, is excepted from obtaining authorization for the construction of a water system.³⁰⁷ Should the commission find the purpose of the joint use is to serve a proposed development of new housing, authorization is required.³⁰⁸

A franchise holder is prohibited without prior authorization of the commission from assigning, leasing or transferring his franchise or rights thereunder,³⁰⁹ acquiring the capital stock of another public service company,³¹⁰ and abandoning or discontinuing the whole or any part of the franchise.³¹¹

The regulation of rates is also within the jurisdiction of the commission.³¹² Rates fixed by the Commission

are prima facie proper³¹³ and will not be disturbed except upon clear and satisfactory evidence that it is unreasonable or unlawful.³¹⁴ An aggrieved party has the right of judicial review in order to determine the validity of any rule or regulation of the commission.³¹⁵

Department of Natural Resources

A MIUS system located in Maryland should be aware of the Department of Natural Resources.³¹⁶ The Departments' function includes inter alia, the review and evaluation of all natural resources policies, plans, programs and practices of state, county, regional and federal agencies and institutions.³¹⁷ With the department is included the Maryland Environmental Service.³¹⁸ and other units charged with the protection of various aspects of the states' natural resources. The Natural Resources units are charged with the prevention, control and abatement of pollution of the waters of the states. The Water Resources Administration may set water quality and effluent standards applicable to the waters of the state or portions of it.³¹⁹ Before any company or person may discharge any pollutant into state waters. A permit must be obtained from the water resources administration.³²⁰ The Administration has the power to establish rules and regulation regarding the issuance of permits³²¹ and such permit is contingent upon a grant of right of entry for inspection.³²²

For violation of any rule or regulation under the

permit, criminal sanctions may be imposed,³²³ and the Secretary of Natural Resources may assess civil penalties.³²⁴

Local Regulation

A MIUS system located in the City of Laurel will only be affected by the city's zoning regulations. In contacts with the city's public utility office, it appears that there are no ordinances that relate to aesthetics and nuisance regulation.

By city ordinance, a public utility is permitted to erect power transmission lines right of way towers and similar facilities in residential zones.³²⁵ The only qualification being that overhead lines and towers must conform to Federal Aeronautics Administration regulations when placed in a public airport approach zone.³²⁶

Although the code specifically allows an electric utility to be placed in a residential zone, any other public utility use or structure may be placed in any residential zone when the board finds that: (1) The proposed use at the location selected is necessary for public convenience and service and cannot be supplied with equal public convenience, if located elsewhere; and (2) The proposed use at the location selected will not endanger the health or safety of workers or residents in the community and will not impair or prove detrimental to neighboring properties or the development thereof.³²⁷

MIUS would not be prevented from locating its power lines within a residential zone but as to the other structures

necessary for services, they must be brought within the above criteria. When a public utility is placed in a residential zone, it shall have an exterior appearance that is in harmony with the general character and appearance of the neighborhood.³²⁸

Colorado

The regulation of public utilities is placed under the control of the Public Utilities Commission³²⁹ in the State of Colorado. By statute, a public utility is defined as "every common carrier, pipeline corporation, gas corporation, electrical corporation, telephone corporation, telegraph corporation, water corporation, person or municipality operating for the purpose of supplying the public for domestic, mechanical or public uses, and every corporation, or person now or hereafter declared by law to be affected with a public interest."³³⁰ It could be safely predicted that a MIUS would be classified as a public utility in Colorado. If the existing law proved to be insufficient to reach the system, further laws could be enacted so as to bring the system within the control of the commission.

Municipally owned utilities are exempt from regulation by the Commission.³³¹ Case law has held that by providing services outside of its limits, a municipality operating its own electrical power plant becomes affected with a public interest and subject to the control of the commission.³³² If a city allows sales of its surplus water to residents of another city, it does not become impressed with a public

interest since its main purpose is to supply its residents and not the general public.³³³

Public utilities must maintain equipment and facilities so as to promote the safety, health, comfort of its patrons.³³⁴ Facilities must be in conformity with commission rules and regulations.³³⁵ The commission further has the power to grant approval of extensions³³⁶ or changes in the existing plant.³³⁷

In order for a public utility to operate in the state it must obtain a certificate of public convenience and necessity.³³⁸ The utility must file a certified copy of the articles of incorporation, if it be a corporation, and adduce showing that it has received the required consent, franchise, permit, ordinance, vote or other authority of the proper county, city and county, municipal or other public authority before a certificate will be issued.³³⁹

The certificate of public convenience and necessity may not be sold, assigned, or leased as other property without the authorization of the commission³⁴⁰ and it may prescribe terms and conditions for selling, leasing or assigning.³⁴¹

Any party that has received an adverse ruling from the commission may apply to the district court for a writ of certiorari or review.³⁴²

Local Regulation

The Colorado Constitution gives home rule cities and not the public utilities commission authority to regulate

rates.³⁴³ This is an exclusive right given to the municipalities.³⁴⁴ A MIUS system located within the City of Aurora would be subject to its rate making powers.

Municipal utility companies for the City of Aurora (internal regulation) are not subject to state regulation, according to the city attorney for Aurora, Colorado.³⁴⁵ Utility rates are legislated locally, and such internal regulation is not subject to state utility commission regulations. No other regulations -- underground, zoning, installments, aesthetic, or otherwise -- were given for the city of Aurora, Colorado.

Utility Rates for Aurora

The City Code of Aurora, Colorado was repealed in its entirety and re-enacted to cover specific regulations relative to utility rates. The Ordinance covered such areas as service connection fees, construction responsibility, water rates, construction water, sewer rates, sewer disposition fees.³⁴⁶

A service connection fee is charged for each tap on the City of Aurora's water system in accordance with a rate fee adopted September 1, 1974. Whereas, the section (5-5-1.1) on construction responsibility states the following:³⁴⁷

The City shall, at its expense, make the physical tap on the water main and furnish and install the water meter, and the applicant for the water service connection shall, at his sole expense, provide the trench, service line pipe, meter yoke where required, meter pit or vault, meter pit or vault cover,

conduit for remote reader units where required, pressure reducing valves where required, and shall install same and backfill trench, all in accordance with the specifications of the City of Aurora.

It should be noted that sole regulation of construction responsibility rests with the City of Aurora. Section 5-5-2 outlines specific monthly rates and charges which are fixed and established for water users served by the Water Department. The rates are affixed for single family residential, commercial and industrial as per meter size, gallons allowed, and a fixed charge based on these variables. Similar water rates are fixed for mobile homes, multiple family dwellings, and condominium townhouses. In Part D of Section 5-5-2, an exclusive authority clause states that:³⁴⁸

The Council shall have the sole and exclusive authority to contract to supply water outside the city limits and to determine and classify all uses therefor. Whenever there is a contract made to supply water outside the city limits, the water rate for the water so supplied shall be the same as those rates established for water service inside the city limits, provided that such contract contains a provision and agreement to annex to the City of Aurora at such time as the lands being supplied with city water are eligible for annexation. Whenever a contract is made to furnish water outside of the city limits that does not contain an agreement to annex said lands at the time that they may become eligible for annexation, then in that event, the City Council shall establish a rate for supplying of water.

The Ordinance regulating utility rates for the City of Aurora is the same as the ordinance regulating such rates in Houston, Texas and Laurel, Maryland except for the body or agency or

Commission having the authority to regulate such rates. In Houston, the Council has the sole authority to establish rates and regulate utilities; in Laurel, Maryland, a Public Service Commission assumes this responsibility. The main difference between the cities is not in the ordinances themselves but in whose authority it is to regulate.

FOOTNOTES - BIBLIOGRAPHY

1. Hunter, "The Early Regulation of Public Service Corporations", 7 American Economic Review, 569-581, 1917; reprinted in part in Dorau, Materials For The Study of Public Utility Economics, pp. 283-294.
2. C. Thompson & W. Smith, Public Utility Economics (1st. ed. 1941).
3. Ibid at 58.
4. Eli Winston Clemens, Economics and Public Utilities (1950).
5. Ibid at 38.
6. 411 P.2d. 785. Western Colorado Power Co. v. PUC, Colo. (1966).
7. Thompson, op. cit., p. 70.
8. Ibid, p. 71.
9. Pittsburgh v. Public Utility Commission, 171 Pa. Super. 187, 90 A.2d 607, P.U.R. (n.s.) 161 (1952).
10. 4. Wheat. 518 (1819).
11. Ibid at p. 47.
12. 37 F.2d 545 (C.C.A. Kan. 1930); see also 37 C.J.S. Franchises, sec. 1.
13. Thompson, note 2, at p. 154.
14. Ibid at p. 155.
15. Trustees of Dartmouth College v. Woodward, 4 Wheat. 518-650 (1819).
16. 94 U.S. 113 (1877).
17. Ibid.
18. 12 Wheat. 419, (1827); 25 U.S. 419.
19. Ibid.

20. Mutual Loan Co. v. Martell, 222 U.S. 225, 233 (1911).
21. License Cases (Pierce v. New Hampshire) 5 Howard. 504, 583 (1847), Quoted in Munn v. Illinois.
22. Noble State Bank v. Haskell, 219 U.S. 104 (1911).
23. Quoted in Dodd, Cases On Constitutional Law, 2d ed. p. 988.
24. C. Thompson & W. Smith, Public Utility Economics (1st. ed. 1941), p. 137.
25. 94 U.S. 113 (1877).
26. Chief Justice Taft in 262 U.S. 536 (1923).
27. Supra note 23, at 153.
28. Ibid.
29. City of Lamar v. Town of Wiley, 80 C. 18, 248 P. 1009 (1926).
30. Re Creekwood Subdivision, 74 P.U.R. 3d 197 (1968).
31. 73 C.J.S. Public Utilities, sec. 1. (1951).
32. 73 C.J.S. Public Utilities, sec. 1. (1951).
33. 123 C. 290, 229 P.2d. 667 (1951).
34. Consol. Coal Co. v. Martin et al, 113 F.2d 813 (C.C.A. 1940).
35. 94 U.S. 113, 121, (1876).
36. Wolf Packing Co. v. Kansas, 262 U.S. 522, 535 (1923).
37. Tex. Civ. App. 10 SW2d 428, 434 (1928).
38. C. Ladd v. Southern Cotton Press & Manufacturing Co., 53 Tex. 172, (1880), cited in Gulf States Utilities Co. v. State, Tex. Civ. App. 46 SW 2d 1018 (1932); also cited in Corney v. Southwestern Motor Transport Corp., 153 Tex. 267, 267 SW 2d 802, 804 (1954).
39. Tex. Rev. Civ. Stat. Ann. art. 1446a, sec. 2.
40. Colo. Rev. Stat. Ann. sec. 115-1-3.
41. Ibid.

42. Ann. Code of Maryland. art. 78, sec. 2.
43. See Cottonwood Mall Shopping Center v. Utah Power Light Co., 440 F. 2d 36 (1971) citing Munn v. Illinois, 94 U.S. 113 (1877).
44. Gregg v. Public Service Commission, 121 Md. 1, 87 A. 1111 (1913).
45. Ann. Code of Maryland. art. 78, sec. 1.
46. Colo. Rev. Stat. Ann. sec. 115-1-3.
47. Colo. Const. art. XXV.
48. State ex rel. Helsel v. Board of Commissioners of Cuyahoga County, 79 N.E. 2d 698, aff'd. 78 N.E. 2d 694, 83 Ohio App. 388, app. dism. 79 N.E. 2d 911, 149 Ohio St. 583 (1948); See also Annot., 86 A.L.R. 2d 413 (1957).
49. Annot., 86 A.L.R. 2d 413 (1957).
50. City of Gainesville v. Gainesville Gas and Electric Power Co., 65 Fla. 404, 62 So. 919 (1913); City of Newark v. Public Utilities Commission, 103 Ohio St. 158, 138 N.E. 96 (1921).
51. City of Moultrie v. Burgess, 212 Ga. 22, 90 S.E. 2d 1 (1955).
52. See Davis v. Weir, 328 F. Supp. at 321 (water utility service is a necessity of life); Stanford v. Gas Service Co. 346 F. Supp. at 720 (gas utility service is a necessity of life); Bronson v. Consolidated Edison, 350 F. Supp. at 447 (electric utility service is a necessity of life). See also the statement of the Court in Moose Lodge No. 107 v. Irvis, 407 U.S. 163, 173 (1972) which characterizes water and electric service as necessities of life.
53. See generally Hattel v. Public Service Co. of Colorado, 350 F. Supp. 240 (D. Colo. 1972).
54. Ihrke v. Northern States Power Co., 459 F. 2d 566 (8th Cir. 1972); Palmer v. Columbia Gas Co. of Ohio, 342 F. Supp. 241 (N.D. Ohio 1972), aff's. 479 F. 2d 153 (6th Cir. 1973); Davis v. Weir, 328 F. Supp. 317 (W.D. Ga. 1971); Freeman v. Frye, No. C-72-350 (N.D. Cal., 31 Oct. 1972); Jackson v. Northern States Power Co., 343 F. Supp. 265 (D. Minn. 1972); Stanford v. Gas Service Co., 346 F. Supp. 717 (D. Kan. 1972); Hattell v. Public Service Co. of Colorado, 350 F. Supp. 240 (D. Colo. 1972); Bronson v. Consolidated Edison Co. of New

York, 350 F. Supp. 443 (S.D. N.Y. 1972); Lamb v. Hamblin, Civ. No. 3-73-civ.-115 (D. Minn., 3d Div., 30 Nov. 1972); Buffington v. Gas Service Co., No. 20664-2 (W.D. Mo. W.D., 4 April 1973); Allen v. Department of Public Utilities, City of Richmond, Civ. No. 403-72-R (E.D. Va., 11 April 1973); contra, Kadlec v. Illinois Bell Telephone Co., 407 F. 2d 624 (7th Cir. 1969); Lucas v. Wisconsin Electric Power Co., 466 F. 2d 638 (7th Cir. 1972), aff'd., 483 F. 2d 754 (3d Cir. 1973), Cert. granted No. 73-5845 (19 Feb. 1974). Limual Case.

55. Cases cited note 54 supra.
56. State v. Board River Power Co., 157 S.C. 1, 153 S.E. 537 (1929). aff'd 282 U.S. 187 (1930); Bair v. Mayor and City Council of Westminster, 243 Md. 494, 221 A 2d. 643; Lewis v. Mayor and City Council of Cumberland, 189 Md. 58, 54 A. 2d 319 (1947); Home Owners' Loan Corp. of Washington D.C. v. Mayor and City Council of Baltimore, 175 Md. 676 3 A2d 747, (1939). See also, Discrimination by mutual association, nonprofit organization, or cooperative in furnishing telephone service, 56 ALR2d 417.
57. Commission v. Lafferty, 233 A.2d 256, (1947).
58. City of Englewood v. Denver, 123 C. 290, 229, P.2d 667, (1951).
59. Oklahoma Gas & Electric Co. v. Wilson & Co., (C.C.A. Okl.) 54 F. 2d 596, 598, (1931); Farmers' Livestock Commission Co. v. U.S., 54 F. 2d 375 (D.C. Ill.) (1931); Lewis v. Mayor and City Council of Cumberland, 189 Md. 58, 54 A.2d 319, (1947); Home Owners' Loan Corp of Washington, D.C. v. Mayor and City Council, 175 Md. 676, 3 A. 2d 747, 749, (1939); Texas Power & Light Co. v. Doering Hotel Co., (Civ. App) 147 S.W. 2d 897, 901, (1941).
60. City of Malvern v. Young, 171 S.W. 2d 470, 205 Ark. 886, (1943) Treadway v. Arkansas Louisiana Gas Co., 196 Ark. 874, 120 S.W. 2d 378, (1938), Arkansas Natural Gas Co. v. Norton Co., 165 Ark. 172, 263 S.W. 2d 775, (1924).
61. Levitt v. Public Utilities Commission, 114 Conn. 628, 159 A. 878, (1932).
62. Tippecanoe County v. Lafayette, etc., R. Co., 50 Ind. 85 (1875).
63. Kousal v. Texas Power & Light Co., 142 Tex. 451, 179 S.W. 2d 283, (1944).

64. Armour Packing Co. v. Edison Elec. Ill. Co. 115 App. Div. 51, 100 N.Y.S. 605 (1906) (rule applicable); Buffalo Merchants Tel. Co. v. Frontier Tel. Co. 112 N.Y.S. 862 (1908) (rule inapplicable).
65. 12 McQuillen Municipal Corporations, sec. 34, 97.
66. Lewis v. Mayor and City Council of Cumberland, 189 Md. 58, 54 A. 2d 319, (1947).
67. Ibid.
68. Cumberland Tel & Tel. Co. v. Kelly, 160 F. 316, 15 Ann. Cas. 1210, (1908).
69. Snell v. Clinton Elec, Light, Heat & Power Co., 196 Ill. 626, 63 N.E. 1082, 58 LRA 284, 89 Am. St. Rep. 341, (1902); revg. on this ground 95 Ill. App. 552 (refusal to furnish patron use of transformer to protect house from fire where no extra pay therefor demanded from other patrons.)
70. Western Reserve Steel Co. v. Cuyahoga Heights, 118 Ohio St. 544, 161 N.E. 920 (1928).
71. Phelan v. Boone Gas Co., 147 Iowa 626, 125 N.W. 208, (1910).
72. Texas & P. Ry. Co. v. United States, 289 U.S. 627, 77 L.Ed. 1410, 53 S. Ct. 768, (1933) revg. 42 F. 2d 281; Wiggins v. Texarkana (Tex. Civ. App.), 239 S.W. 2d 212. aff'd 151 Tex. 100, 246 S.W. 2d 622, (1952).
73. Superior v. Douglas County Tel. Co., 141 Wis. 633, 668, 122 N.W., 1023, (1909).
74. Ibid.
75. Western Union Tel. Co. v. Call. Pub. Co., 181 U.S. 92, 45 L. Ed. 765, 21 S. Ct. 561, (1901); Knotts v. Nollen, 206 Iowa 261, 218 N.W. 563.
76. Owensboro Gaslight Co. v. Hildenbroad, 19 Ky. L. Rep. 983, 42 S.W. 351, (1897); Western Union Tel. Co. v. Call. Pub. Co., 181 U.S. 92, 45 L. Ed. 765, 21 S.Ct. 561, (1901).
77. Western Union Tel Co. v. Call. Pub. Co., 181 U.S. 92, 45 L. Ed. 765, 21 S. Ct. 561, (1901).
78. Ibid.
79. Mercur v. Media Elec. Light, Heat & Power Co., 19 Pa. Super. 519.

80. 178 Ga. 575, 173 S.E. 853, (1934).
81. Ibid.
82. Robbins v. Bangor Railway & Electric Co., 100 Me. 496, 62 A. 136, 1 LRA (NS) 963, (1905).
83. Ibid.
84. Hoover v. Deffenbaugh, 83 Neb. 476, 119 N.W. 1130 (1909).
85. Re Misillia Park Water Works, 8 P.U.R. 3d 192 (1955); Re Riverside Grove Water Co., 20 P.U.R. 3d 117 (1957).
86. Shaw v. San Diego Water Co., 118 Cal. 16, 50 P. 693 (1897); Horner v. Oxford Water Elec Co., 153 N.C. 535, 69 S.E. 607. See also 40 ALR2d 1331, variations of utility rates based on flat and metered rates.
87. Atchison, T. & S.F.R. Co. v. Denver & N.O.R. Co., 110 U.S. 667, 28 (1884); L.ED. 291, 4 S.Ct. 185; Tift v. Southern Ry. Co., 125 F. 789; Home Owners' Loan Corp. of Washington, D.C. v. Mayor and City Council of Baltimore, 175 Md. 676 3 A2d 747 (1939).
88. United States v. Chicago & N.W.R. Co., 127 F. 785, 790 (1904); Hays v. Pennsylvania Co., 12 F 309, 311 (1882).
89. Willcox v. Consolidated Gas Co., 212 U.S. 19, 53 L.Ed. 382 29 S.Ct., 200 (1909) (gas to city at discount). See also Interstate Commerce Commission v. Baltimore & O.R. Co., 145 U.S. 63, 36 L. Ed. 699 12 S.Ct. 844 (1892).
90. New York Tel. Co. v. City School Dist., 15 App. Div.2d 583, 222 N.Y.S.2d 252 (1961) (telephone service at reduced rate); Board of Trustees v. Henderson, 196 N.C. 687, 146 S.E. 808 (1929) (ordinance granting franchise requiring grantee to furnish water to public schools free of charge).
91. New York Tel. Co. v. Siefel-Cooper Co., 202 N.Y. 502, 96 N.E. 109 (1911) (telephone service to charitable institutions and clergymen at discount).
92. Kansas City So. Ry. v. La. Pub. Serv. Comm'n, 225 La. 399, 73 So. 2d 188, 5 P.U.R.3d 339 (1954); Texas R.R. Comm'n v. U.S. (Tex. Civ. App.) 290 S.W.2d 699 (1956, aff'd. 159 Tex. 197, 317 S.W.2d 927, (1958).
93. California Comm'n. v. U.S. 355 U.S. 534 (1958).

94. See for example, U.S. v. Ala. Gas Co., 75 P.U.R. (n.s.) 185 (Ala. Pub. Serv. Comm'n, 1948); Re Pacific Gas & Electric Co., 82 P.U.R. (n.s.) 473 (Cal. Pub. Util. Comm'n, 1949); Re Hoover Motor Express Co., 16 P.U.R.3d 515 (Tenn. Pub. Util. Comm'n, 1956).
95. Birmingham Water Works Co. v. Kelly, 2 Ala. App. 629, 56 So. 838 (1914).
96. Milwaukee v. Public Service Comm'n, 244 Wisc. 73, 12 N.W.2d 606 (1944).
97. State v. Metaine Falls Light & Water Co., Iowa, 248 F. 1142 (1914).
98. Homestead Co. v. Des Moines Electric Co., Iowa, 248 F. 439 160 C.C.A. 449 (1918); Schenker v. San Antonio (Tex. Civ. App.) 369 S.W.2d 626 (1963).
99. Inter-State Water Co. v. Dawville, 379 Ill. 41, 39 N.E. 2d 356 (1942).
100. Maxwell v. Ohio Fuel Gas Co., 22 N.E.2d 639 (1938).
101. Capital City Water Co., 115 Ala. 156, 174, 22 So. 140; Chicago v. Northwestern Mut. Life Co., 218 Ill. 40, 75 N.E. 803 1 LRA (NS) 770, affg. 120 Ill. App. 497 (1905); Panton v. Duluth Gas & Water Co., 50 Minn. 175, 52 N.W. 527, 36 AM. St. Rep. 635 (1892).
102. Natural Gas Pipeline Co. v. Federal Power Commission, 129 F2d 515 (1942); Alton Brick Co. v. Alton Water Co., 42 Ill. App2d 451, 192 N.E.2d 599 (1963) (governed by statute).
103. Natural Gas Pipeline Co. v. Federal Power Commission, supra; Texarkana, Texas v. Arkansas Louisiana Gas Co., 118 F2d 289 (1940); Alton Brick Co. v. Alton Water Co., supra.
104. Alabama Power Co. v. Dunlap, 240 Ala. 568, 200 So. 617 (1941); Whitsett v. St. Clair (Mo. App.), 80 S.W.2d 696 (1935). Sufficiency of complaint in action for damages for refusal to supply gas to consumer, see Fair v. Home Gas & Electric Co., 13 Cal. App. 589 110 p. 347 (1910).
105. Indiana Natural & Illuminating Gas Co. v. Anthony, 26 Ind. App. 307, 58 N.E. 868.
106. Southern Bell Tel. Co. v. Earle, 118 Ga. 506, 45 S.E. 319; Barton v. Cumberland Tel. Co., 116 La. 125, 40 So. 590 (1906).

107. Alabama Power Co. v. Dunlap, 240 Ala. 568, 200 So. 617 (1941); Birmingham Waterworks Co. v. Wilson, 2 Ala: App. 581, 56 So. 760 (1911).
108. Mandamus is the name of a writ which issues from a court of superior jurisdiction, directed to a private or municipal corporation, or any of its officers, or to an executive, administrative or judicial officer, or to an inferior court, commanding the performance of a particular act therein specified, and belonging to his or their public, official, or ministerial duty, or directing the restoration of the complainant to rights or privileges of which he has been illegally deprived. Black's Law Dictionary 1113 (4th ed. 1951).
109. Seaton Mountain Elec. Light, Heat & Power Co. v. Idaho Springs Inv. Co., 49 Colo. 122, 111 p. 834 (1910); Town of Wickenburg v. Sabin, 68 Ariz. 75, 200 P.2d 342 (1948); Central Union Tel. Co. v. Hopper, 124 Ind. 600, 24 N.E. 1091 (1890).
110. Pond v. New Rochelle Water Co., 183 N.Y. 330, 76 N.E. 211, 1 LRA (NS) 958 (1906). See also Wainwright v. Queens County Water Co., 78 Hun. 146, 28 N.Y.S. 987 (1894); Richman v. Consolidated Gas Co., 114 App. Div. 216, 100 N.Y.S. 81, affd 186 N.Y. 209, 78 N.E. 871 (1906).
111. Huffman v. Marcy Mut. Tel. Co., 143 Iowa 590, 121 N.W. 1033 (1909); Braine v. Stroud, 385 P2d 428 (1963); Home Owners' Loan Corp. v. Logan City, 97 Utah 235, 92 P.2d 346 (1939).
112. A mandatory injunction is one which (1) commands the defendant to do some positive act or particular thing; (2) prohibits him from refusing (or persisting in a refusal) to do or permit some act to which the plaintiff has a legal right; or (3) restrains the defendant from permitting his previous wrongful act to continue operative, thus virtually compelling him to undo it, as by removing obstructions or erections, and restoring the plaintiff to the former condition. Black's Law Dictionary 923 (4th ed. 1951).
113. Wright v. Glen Tel. Co., 112 App. Div. 745, 99 N.Y.S. 85, affg. 48 Misc. 192, 95 N.Y.S. 101 (1905).
114. Injunction is a prohibitive writ issued by a court equity, at the suit of a party complainant, directed to a party defendant, forbidding the latter to do some act, or to permit his servants or agents to do some act, which he is attempting or threatening to commit, or restraining him in

the continuance thereof, such act being unjust and inequitable, injurious to the plaintiff, and not such as can be adequately redressed by an action at law. Black's Law Dictionary 923 (4th ed. 1951).

115. Vinson v. Winters (Tex. Civ. App.), 178 S.W. 2d 142 (1944).
116. Smith v. Birmingham Water Works Co., 104 Ala. 315, 16 So. 123 (1894); Ball v. Texarkana Water Corp. (Tex Civ. App.), 127 S.W. 1068 (1910).
117. State v. Lone Star Gas Co., (Tex Civ. App.), 127 S.W. 1068 modified on other grounds Lone Star Gas Co. v. State, 153 S.W.2d 681 (1939), petition denied Ex Parte State of Texas, 62 S.Ct. 418, 315 U.S. 8, 86 L.Ed. 579 (1942); State v. Lone Star Gas Co., 86 S.W. 2d 484, error refused, reversed on other grounds Lone Star Gas Co. v. State of Texas, 58 S.Ct. 883, 304 U.S. 224, 551, 82 L.Ed. 1304 (1938), rehearing denied 58 S.Ct. 1051, 82 L. Ed. 1549, 304 U.S. 590 (1938).
118. State ex rel. Public Service Commission v. Shain, 342 Mo. 867, 119 S.W.2d 220, 343 (1935).
119. Pacific Power & Light Co. v. Federal Power Commission, C.C.A. 9, 111 F.2d 1014 (1940).
120. Philadelphia Electric Co. v. Public Service Commission of Pennsylvania, 314 Pa. 207, 171 A. 690 (1934).
121. New York State Electric & Gas Corporation v. Maltbie, 7 N.Y.S. 2d 235 (1938).
122. Springfield Gas Co. v. Springfield, 126 N.E. 739 (1920).
123. McCran v. Public Serv. R. Co., 122 A. 205 (1923).
124. Brooks Scanlon Lumber Co. v. Ry. Comm. of La. 251 U.S. 396, 40 S.Ct. 183, 64 L.Ed. 323 (1920); Gates v. Boston and N.Y. Airline Co. 53 Conn. 333 (1885); State ex rel. Little v. Dodge City M. and T Ry., 53 Kan. 329, 36 P. 755 (1885); State ex rel Naylor v. Dodge City Co., 53 Kan. 377, 36 P. 747 (1894); State ex rel. Grinsfelder v. Spokane Street Ry., 19 Wash. 518, 53 P. 719 (1898).
125. Dartmouth College v. Woodward, 4 Wheat. (U.S.) 519, 4 L.Ed. 629 (1819); State of Texas v. Enid O. and W. Ry., 108 Tex. 239, 191 S.W. 560 (1917). "The charter, when so issued and accepted, constituted a contract between the state and the railway company, and like other contracts its provisions and covenants are binding upon such party thereto..."

126. Montell v. Consolidated Coal Co., 45 Md. 16 (1876); Pacific Spruce Co. v. McCoy, (D.C. Or. 1923) 294 F. 711; St. Clairsville v. Public Utility Commission, 102 Ohio St. 574, 132 N.E. 151 (1921). See Conklin v. Prospect Park Hotel Co., 48 Hun. (N.Y.) 619, 1 N.Y.S. 406 (1888).
"Indeed we are by no means certain that the charter imposes any duty on the defendant of carrying on the hotel."
127. Montell V. Consolidated Coal Co, supra. Here it was held that a company with a charter granted for the purpose of manufacturing iron and mining coal with the right to build a railroad and carry its own products and reserving to citizens the right to transport products over the road when built, had the right to withdraw such road at its own election and the charter imposed no obligation to continue. Pacific Spruce Co. v. McCoy, supra, concerned a private carrier that extended service to certain citizens after the citizens petitioned it to do so. Held no obligation to continue.
128. St. Clairsville v. Public Utility Commission, supra.
129. Gress v. Village of Fort Laramie, 100 Ohio St. 35, 125 N.E. 112 (1919). In this case the company had a franchise to operate for twenty-five years, yet was allowed to discontinue. State of Texas v. E. Texas Ry. Co., (D.C. Tex. 1922) 283 F. 584. Here was a franchise to construct and operate a railroad for a period of twenty-five years. Held not mandatory so as to compel operation at a loss.
130. State v. Bullock, 78 Fla. 321, 82 So. 866 (1919); Brooks Scanlon Lumber Co. v. Ry. Comm. of La., supra; Town of Hinckley v. Kettle River Ry., 70 Minn. 105, 72 N.W. 835 (1897).
131. State v. Bullock, supra; Gates v. Boston and N.Y. Air Line, 53 Conn., 333 (1885).
132. City of Gainesville v. Gainesville Gas & Electric Power Co., 65 Fla. 404, 62 So. 919 (1913).
133. Ibid.
134. Code of Maryland Chapter 445, Secs. 26 $\frac{1}{2}$ and 33 $\frac{1}{2}$ (1914). Texas Revised Civil Statute art. 6349 and 6350 (1918).
135. Laws of Kansas, chap. 238, sec. 10 (1911) (Comp. St. 1915, sec. 8337). "Every common carrier and public utility governed by the provisions of the act shall be required to furnish reasonably sufficient and efficient service. . ." State v.

- Postal Teleg. Cable Co., 96 Kan. 298, 150 P. 544. In states having no express statutes governing abandonment, the duty to continue operation would have to be implied from statutes similar to the Kansas Statute. See also Laws of Colo. chap. 127, sec. 13, b (1913).
136. State of Texas v. Enid O. & Western Ry., 108 Tex. 239, 191 S.W. 560 (1917). A charter of railway constitutes a contract with the state, and is granted on the implied understanding by the company that it construct and operate a railway between limits specified and under express statutory enactment constituting part of its contract, and that it will not abandon or remove any part of the main line once constructed.
 137. Many of the leading Supreme Court decisions on abandonment concern railroads. Railroads, as public utilities, are not under discussion in this paper; however, the decisions are considered because they indicate legal attitudes toward public utility abandonment in general.
 138. Texas R.R. Comm. v. Eastern Texas R.R. Co., 264 U.S. 79, 85 (1924). See also, Brooks Scanlon Co. v. R.R. Comm. of La., 251 U.S. 396, 399 (1920).
 139. Ft. Smith L. & Traction Co. v. Bourland, 267 U.S. 330 (1925).
 140. To require continued operation at a loss is a taking of property without just compensation hence a violation of the fourteenth amendment. See cases cited note 138, *supra*; also Miss. R.R. Comm'n v. Mobile & O. R.R. 244 U.S. 388 (1917) (discontinuance); Dela. & H.R.R. v. Public Serv. Comm'n, 245 App. Div. 66, 281 N.Y.S. 155 (3d Dept. 1935) *aff'd mem.* 270 N.Y. 519 N.E. 298 (1936).
 141. Re Loyalton Electric Co., (1915) P.U.R. 1915 C. 804 (Calif.)
 142. *Ibid.*
 143. Re Charleston Interurban Ry., P.U.R. 1916F 338 (1916).
 144. City of Potwin Place v. Topeka Ry., 51 Kan. 609, 33 P. 309 (1893).
 145. Equity Trust Co. v. Ohio Peoria & St. Louis Ry., 314 Ill. 96, 145 N.E. 290 (1924).
 146. Virginia v. Knight, P.U.R. 1923E 816 Va. (1923).
 147. Sun Prairie v. PSC, 37 Wis.2d 96, 71 P.U.R.3d 417 (1967).

148. See, e.g., Conn. Gen. Stat. Rev. sec. 16-41 (1958); Fla. Stat. Ann. sec. 366.12 (1958); Ill. Rev. Stat. ch. 111 2/3, sec. 80 (1959); Mo Ann. Stat. sec. 386.570 (1952); Mont. Rev. Codes Ann. sec. 70-130 (1947); N.J. Rev. Stat. sec. 48:2-42 (1937). See also York Tel & Tel. Co. v. Pennsylvania Pub. Util Comm'n, 181 Pa. Super. 11, 121 A.2d 605 (1956).
149. See, e.g. Conn. Gen. Stat. Rev. sec. 16-41 (1958); Mo. Rev. Stat. sec. 386.570 (1952); N.J. Rev. Stat. sec. 48:2-42 (1937); Pa. Stat. Ann. tit. 66, sec. 1492 (1959).
150. See note 149 supra.
151. See, e.g. Ark. Stat. Ann. sec. 73-258 (1947); Colo. Rev. Stat. Ann. sec. 115-7-6 (1953); Idaho Code Ann. sec. 61-709 (1948); Ill. Rev. Stat. ch. 11 2/3, sec. 81 (1959).
152. Re Lake Erie Bowling Green and Napoleon Ry. (1916) P.U.R. 1916F 553 (Ohio); See Colo. Rev. Stat. Ann. sec. 115-7-4 (1953); Md. Ann. Code art. 78 sec. 99 (1957).
153. Re Lake Erie Bowling Green and Napoleon Ry, supra.
154. See Cal. Pub. Util. Code sec. 2106; Colo. Rev. Stat. Ann. sec. 115-7-2 (1953); Me Rev. Stat. Ann. ch. 44, sec. 78 (1954); Mo. Ann. Stat. sec. 387.350 (1952); Pa. Stat. Ann. tit. 66, sec. 1500 (1959).
155. See Ariz. Stat. Ann. sec. 40-423 (1956); Colo. Rev. Stat. Ann. sec. 115-7-2 (1953); Ga. Code Ann. sec. 93-415 (1958); Ill. Rev. Stat. ch. 11 2/3, sec. 77 (1959).
156. See Ariz. Rev. Stat. Ann. sec. 40-423 (1956) (exemplary damages); Cal. Pub. Util. Code sec. 2106 (same); Colo. Rev. Stat. Ann. sec. 115-7-2 (1953) (punitive damages); Ga. Code Ann. secs. 93-413, 415 (1955) exemplary damages.
157. Choctaw Elec. Co-op v. Redman, 293 P.2d 564 (1954); Home Owners' Loan Corp. v Logan City, 97 Utah 235, 92 P.2d 346 (1939). Mandamus will not issue until all administrative remedies have been exhausted. Leighton v. New York Tel. Co., 184 Misc. 827, 55 N.Y.S. 2d 193 (Sup. Ct. 1945).
158. See Revision of Serv. Rules for Elec. Util., 40 P.U.R. (n.s.) 99, 104 (Wis. Pub. Serv. Comm'n 1941); of Oregon Short Line R.R., P.U.R. 1915A, 383 (Idaho Pub. Util. Comm'n); Florida Power Corp. v. Tallahassee, 154 Fla. 638, 18 So. 2d 671 (1944).

159. Arkansas Power & Light Co. v. Abbound, 204 Ark. 808, 164 S.W. 2d 1000 (1942); Bissel v. Eastern Illinois Utility Co., 222 Ill. App. 408 (1921); Milford Canning Co. v. Central Illinois Public Service Co., 39 Ill. App. 2d 258, 188 N.E. 2d 397 (1963).
160. Arkansas Power & Light Co. v. Abbound, supra.
161. Capital City Water Co. v. State, 105 Ala. 406, 18 So. 62 (1894).
162. Johnson v. Chicago, Milwaukee, St. Paul & Pacific R. Co., 400 F.2d 968 (9th Cir. 1968). See also, Chesapeake & O. Ry. Co. v. J. Wix and Sons Ltd. 87 F.2d 257, 259 (4th Cir. 1937); Farr Co. v. Union Pac. R. Co., 100 F.2d 437, 439 (10th Cir. 1939).
163. Johnson v. Chicago, Milwaukee, St. Paul & Pacific R. Co., supra.
164. Southwestern Public Service Co. v. Artesia Alfalfa Growers' Asso., 67 N.M. 108, 353 P2d 62 (1960).
165. CCH Util. L. Rep. par. 21,147 (N.J. Bd. Pub. Util. Comm'rs 1969).
166. Chrome Plating Co. v. Wisconsin Electric Power Co., 241 Wis. 554, 6 N.W.2d 692 (1942).
167. Krier Preserving Co. v. West Bend Heating & Lighting Co., 198 Wis. 595, 225 N.W. 200 (1929).
168. Barnes v. Sand Mountain Electric Co-op., 268 Ala. 698, 108 So.2d 382 (1959).
169. Coal Dist. Power Co. v. Katy, 141 Ark. 337, 217 S.W. 449 (1919); Krier Preserving Co. v. West Bend Heating & Lighting Co., supra.
170. Telluride Power Co. v. Williams (CA10 Utah) 172 F.2d 673 (1949); Tallapoosa River Electric Co-op v. Burns, 271 Ala. 435, 124 So. 2d 672 (1960); Kentucky Power Co. v. Kilbourn, 307 S.W.2d 9 (1957).
171. Hippard Coal Co. v. Illinois Power & Light Corp., Ill. App. 47, 45 N.E.2d 701 (1942); Kimball Bros. Co. v. Citizens Gas & E. Co., 141 Iowa 632, 118 N.W. 891 (1908); Roben v. Ryegate Light & Power Co., 91 Vt. 402, 100 A. 768 (1917).

172. Lund v. Princeton, 250 Minn. 472, 85 N.W.2d 197 (1957); Curry v. Norwood Electric Light & Power Co., 125 Misc. 279 211 N.Y.S. 441 (1925); Hiers v. South Carolina Power Co., 198 S.C. 280, 17 S.E. 2d 698 (1914).
173. Hiers v. South Carolina Power Co., supra.
174. Terrace Water Co. v. San Antonio Light & Power Co., 1 Cal. App. 511, 82 P. 562 (1905); Kohler v. Kansas Power & Light Co., 192 Kan 226, 387 P2d 149 (1963).
175. Mullen v. Otter Tail Power Co., 130 Minn. 386, 153 N.W. 746 (1915); Carroway v. Carolina Power & Light Co., 226 S.C. 237, 84 S.E.2d 728 (1954); Alabama Power Co. v. Henson, 238 Ala. 348, 191 So. 379 (1939).
176. Jones v. Southwestern Gas & Electric Co., 171 So. 163 (1936); Hoberg v. New York Edison Co., 144 Misc. 726, 258 N.Y.S. 701 (1932); Bartman v. Wisconsin Michigan Power Co., 214 Wis. 608, 254 N.W. 376 (1934); Finnin v. New Orleans Pub. Service, 167 La. 122, 118 So. 860 (1928).
177. Alabama Power Co. v. Henson, supra.
178. See note 176 supra.
179. Becker v. Borough of Schuylkill Haven, 200 Pa. Super. 305, 189 A.2d 764 (1963).
180. Ibid.
181. 16 U.S.C. 79/a-823 (1964).
182. 16 U.S.C. 797(e) - 799 (1964).
183. 16 U.S.C. 791a - 825r.
184. Gibbons v. Ogden, 22U.S. (2 Pet) 245, 250 (1829); United Wilson v. The Black Bird Creek Marsh Co., 27 U.S. (2 Pet) 245, 250 (1829); United States v. Coombs 37 U.S. (12 Pet) 72, 78 (1839); Gilman v. Philadelphia, 70 U.S. (3 Wall.) 713, 724-725 (1866); United States v. Rio Grande Dam & Irrigation Co., 174 U.S. 690, 703 (1899); Leavy v. United States, 177 U.S. 621, 632 (1900); United States v. River Rouge Co., 269 U.S. 411, 419 (1926).
185. 311 U.S. 377 (1940).
186. Ibid at 416.
187. Ibid at 405-406.

188. Ibid at 423.
189. 328 U.S. 152 (1946).
190. 16 U.S.C. 802 (b) (1964).
191. 328 U.S. at 170.
192. 16 U.S.C. 797(f), 798 (1964).
193. 16 U.S.C. 800 (1964).
194. 16 U.S.C. 803(i) (1964).
195. 16 U.S.C. 797(e) (1964).
196. 16 U.S.C. 797(d) (1964).
197. 16 U.S.C. 803 (1964); see also FPC v. Idaho Power Co., 344 U.S. 17(1952) where the court held that the FPC had the power to condition a grant of a license upon the requirement that surplus energy be made available for government use. The court said: "Protection of the public domain, conservation of water power resources, development of comprehensive plans for the waterways - each of these might on the facts of a case be sufficient to authorize the grant of permission to a public utility company to use the public utility company to use the public domain provided it agreed to use its excess capacity to transmit government power."
198. 16 U.S.C. 813 (1964).
199. 16 U.S.C. 812 (1964); see also Safe Harbor Water Power Co. v. F.P.C., 179 F.2d. 179 (1949). Commission allowed to regulate rates where two states involved could not agree on fair rates.
200. 33 U.S.C. 1251-1376 (Supp. II, 1972).
201. 33 U.S.C. 1251-1376 (Supp. II, 1972).
202. Ibid 1342(b).
203. Ibid 1313 (a)(1).
204. Ibid 1313(a)(3).
205. See United States v. Appalachian Electric Power Co., 311 U.S. 377, 416-17 (1940); see also 65 C.J.S. Navigable Waters 1 (1966).

206. 33 U.S.C. 1313(d)(1)(A) (Supp. II, 1972).
207. Ibid 1320(a).
208. Ibid.
209. Ibid 1320(d)
210. Solid Waste Disposal Act (1970).
211. Solid Waste Disposal Act (1970)
212. Solid Waste Disposal Act (1970).
213. Rev. Rul. 72-190; IRC 103(c)(4)(E).
214. Ibid.
215. 42 U.S.C. 1857 et.seq. (1970).
216. Clean Air Act 102.
217. Clean Air Act 107, 110(a)(1), 42 U.S.C. 1857c-2, 5(a)(1) (1970).
218. 15 U.S.C. 79-b(8)(1971).
219. 15 U.S.C. 79-b(8) (1971).
220. Ibid 79K(6)(8), see also North American Co. v. Sec, 327 U.S. 686, 90 L.Ed. 645, 665 Ct. 785 (1946); Sec. v. NEESI, 384 U.S. 176, 16 L.Ed. 2d. 456, 86 S.Ct. 1397 (1966).
221. Sec. 2(a)(2a)(A) A "Gas Utility Company" is defined in terms of a company distributing gas at retail, thus excluding companies engaged in the production and transmission of natural gas. (Sec. 2(a)(4)).
222. Sec. 11(b)(1).
223. Sec v. New England Electric System, 390 U.S. 207 (1968); Columbia Gas and Electric Corp., Holding Company Act Release No. 2477 (1941), United Gas Improvement Co., Holding Company Act Release No. 2962 (1941).
224. See 12 McQuillan, Municipal Corporations, 34.146 (ed. 1970).
225. Ibid.: see also 1 Priest, Principles of Public Utility Regulation (Michie Co. 1969); Annot. Code of Md. Art 78 I (1955); Colo. Rev. Stat. Ch. 115, Art. 4 115-4-1.

226. The exceptions are found in the State of Texas, where there is no state regulation of telephone and electric utilities and in Minnesota and South Dakota where electric utilities are not state regulated.
227. 1 Priest, Principles of Public Utility Regulation (Michie Co., 1969).
228. Hofheinz, Proposal For the creation of a Texas Public Utilities Commission. Hearing before the Senant Subcommittee on Consumer Affairs in Houston, Texas, September 13, 1974. The Mayor offered the plan, in resolution form to the Texas Municipal League at its Annual Conference, October 27-29, 1974.
229. Hofheinz proposal first point.
230. Ibid third point.
231. Ibid., fourth point.
232. Ibid., sixth point.
233. Ibid.
234. Texas Constitution Art. XI 5j Texas Rev. Civ. Stat. Ann. Articles 1165-1182f (1963).
235. Tex. Rev. Civ. Stat. Ann. Art. 1175, Sec. 12 (1963).
236. Tex. Rev. Civ. Stat. Ann. Articles 1119-1124 (1963).
237. Tex. Rev. Civ. Stat. Ann. Art. 1446a, 2 (1963).
238. Ibid.
239. Ibid., Article 1175, 12 (1963).
240. Houston, Texas code ch. 38, Art. I 2-214 .
241. Ibid.
242. Ibid.
243. Ibid.
244. Houston, Texas Code Art. II, 6.

245. Ibid.: see also Mulkey v. Kaufman, 286 S.W. 620; Wichita Falls v. Landers 291 S.W. 696; Richmond Plaza Civic Asso. v. Houston, 270 S.W. 2d 235 cited in 40 Texas. Jur. 2d. Municipal Corp. 460 (1962).
246. Houston, Texas Charter, art. II 17; see also. McCutcheon v. Wozeneroft, 230 S.W. 733, received on other ground at 255 S.W. 716.
247. Houston, Texas charter, art. II 17.
248. Ibid., art. II 6a.
249. Ibid.
250. Texas-New Mexico Utilities Co., v. Teague 174 S.W.2d 57, err. ref. W.O.M.
251. Tex. Ann. Civ. Stat. Art. 7428(a), 1.
252. 37 C.J.S. Franchises 22 (1943).
253. Harris County Water Control and Improvement District No. 58 v. City of Houston (Tex. Ct. Civ. App.) 357 S.W.2d 789.
254. Fainsod, Government and the American Economy (Morton & Co. 1959).
255. Tex. Tax - Gen. Ann. Art. 1103 (1960).
256. Baird v. West Texas Utilities, 174 S.W.2d. 649. err. ref.
257. Baird v. West Texas Utilities, supra, (violating Tex. Const. Art I, 19).
258. Houston, Texas Code Art. IX, 2-177, (1968).
259. Ibid., Art v. 38-105.
260. Ibid. 38-103.
261. Euclid v. Amber Realty Co., 21 A.L.R. 3d. (1968).
262. In 1948, only property owners were allowed to vote, and the results were 14,442 to 6,555. In 1962, when there was no such restriction on voting, the vote was 70,957 to 54,279; approximately 48.5% of those qualified voters.
263. Porter v. Southwestern Public Service Co., 489 S.W. 2d 36.
264. Tex. Rev. Civ. Stat. Ann. Art. 1175(18) (1963).

265. Tex. Co. v. Fisk, 129 SW/88.
266. Burditt v. Swenson 17 Tex. 489; Miller v. Burch, 32 Tex. 208; Hamm v. Briant 124 S.W. 112.
267. Comminge and Geisler v. Stevenson, 76 Tex. 642, 13 S.W. 556; Brewster v. Forney, 223 S.W. 175; See also cases cited in footnote 266.
268. Trueheart v. Parker 275 SW 640; Stroughton v. Ft. Worth, 277 S.W.2d 150.
269. Tex. Rev. Civ. Stat. Ann. Art. 1175 (19)(1963).
270. Boyd v. City of San Angelo, 290 S.W. 833 (Tex. Civ App. 127, err. ref.); Storey v. Central Hide and Rendering Co., 148 Tex. 509, 226 S.W. 2d 615 (Tex.); Dunaway v. City of Austin 290 S.W. 2d 703.
271. Tex. Rev. Civ. Stat. Ann. Art. 7621d-1, (Supp. 1970).
272. TWQA 1.06.
273. TWQA 3.14.
274. Tex. Rev. Civ. Stat. Ann. Art. 4477-1, 1-24 (1966).
275. Tex. Rev. Civ Stat. Ann. Art. 7621 d-1, Hol(a)(1) (Supp.1970).
276. TWQA 4.01. The statute prohibits all discharges unless "authorized by a permit, rule, regulation, or other order of the Bd.
277. TWQA 6.01(a)
278. The statute requires review based on the arbitrariness or unreasonableness of the Bd. Action. TWQA 6.0(e). In Texas, the reasonableness test is interpreted to mean supported by substantial evidence. See Southern Canal Co. v. State Board of Water Eng'rs., 159 Tex. 227, 231, 318 S.W. 2d 619, 624 (1958); Bd. of Water Eng'rs v. Colorado River Municipal Water District 152 Tex. 77, 81, 254 S.W.2d 369, 372, (1953).
279. Tex. Rev. Civ. Stat. Ann. Art. 4477-7. (Supp. 1970).
280. Tex. Rev. Civ. Stat. Ann. Art 4477-7, 4 (Supp. 1970)
The R.R. Comm. has authority for disposal of solid wastes that are created by the production of oil and gas.

281. Tex. Rev. Civ. Stat. Ann. Art. 4477-7 4.01 (Supp. 1970).
282. Cities are granted the power, by the statutes, to construct sewerage facilities and to acquire land for that purpose by either purchase or eminent domain. See Tex. Rev. Civ. Stat. Ann. Art. 969b 1(Supp 1969), and arts. 1015(3), 1015
283. Tex. Rev. Civ. Stat. Ann. Arts. 701, 823 (1964), Art. 969b, 3 and arts 1015(43), 1106, and 1175(10)(1963).
284. Tex. Rev. Civ. Stat. Ann. Arts. 1111, 1118a (1963).
285. Tex. Rev. Civ. Stat. Ann. Art. 1180, 3 and arts, 1118s, 1119, 1175(13)(1963).
286. Tex. Rev. Civ. Stat. Ann. Art. 1110c, 4-22, as amended art 1110c, 19, and art 1110e (Supp. 1969).
287. Tex. Rev. Civ. Stat. Ann. Art. 7621d-1 3.26-8 (Supp. 1969).
288. Ann. Code of Md. Art. 78 1(1969).
289. Ibid., 2(o).
290. Gregg v. Public Service Comm'n, 121 Md. 1, 87 A.1111 (1913); Chenaulth v. Public Serv. Comm'n, 143 Md. 622, 123 A. 77 (1923). See Crisfield v. Chesapeake and Potomac Tel. Co., 131 Md. 444, 102 A. 751 (1917).
291. Ann. Code of Md. Art. 78 1, (1969).
292. Id. See. Laird v. Baltimore and O.R.R., 121 Md. 179, 88A. 347, 348 (1913); Northern Cent. R.R. v. Public Serv. Comm'n. 124 Md. 141, 91A. 768 (1914); Public Serv. Comm'n v. Philadelphia, B. and W.R.R., 155 Md., 104, 141 A.509 (1928) Albert v. Public Serv. Comm'n., 209 Md. 27, 120 A.2d 346 (1956).
293. Kelly v. Consolidated Gas. Elec. Light and Power Co., 153 Md. 523, 138 A. 487 (1922); Charles County Sanitary Dist., Inc., 267 Md. 590, 298 A.2d 419 (1973).
294. Kelly v. Consolidated Gas Elec., Light and Power Co., supra; Commissioners v. Eastern Shore Pub. Serv. Co., 192 Md. 333, 64 A.2d 151 (1949).
295. Warchester Elec. Co. v. Hancock, 151 Md. 670, 135 A. 832 (1927).
296. Charles County Sanitary Dist. Inc. v. Charles Util. Inc., 267 Md. 590, 298 A.2d 416 (1973).

- 297. Ibid.
- 298. Ann. Code of Md. Art. 78, 54A.
- 299. Ibid., 24Q
- 300. Ibid., 54A.
- 301. Ibid.
- 302. Ibid.
- 303. Ibid., 24A.
- 304. Ibid.
- 305. Ibid.
- 306. Ibid.
- 307. Ibid.
- 308. Ibid.
- 309. Ibid., 24(b)(1).
- 310. Ibid. (b)(2).
- 311. Ibid. (b)(3).
- 312. Ibid., 68. See also Gregg v. Public Serv. Comm'n, 121 Md. 1, 87 A. 1111 (1913); Chenault v. Public Serv. Comm'n, 143 Md. 622, 123A. 77(1923); Yeatman v. Towers, 126 Md. 513, 95A. 158 (1915).
- 313. Pennsylvania R.R. v. Towers, 126 Md. 59, 94A. 330 (1915). Aff'd, 245 U.S. 6, 38 S.Ct. 2, 62 L.Ed. 117 (1917).
- 314. Public Serv. Comm'n v. United Rys. and Elec. Co., 155 Md. 572, 142 A. 870 (1928); Public Serv. Comm'n and Byron, 153 Md. 464, 138 A. 404 (1927).
- 315. Ann. Code of Md. Art. 78 89 (1964).
- 316. Ann Code of Md. Natural Resources Tit. 1, 1-101 (1974).
- 317. Ibid., 1-101 (b)(1).
- 318. Ibid., 1-102 (a)(7), 3-103.

- 319. Ibid., 1-102 (a)(7), 3-103.
- 320. Ibid., 8-1413(c).
- 321. Ibid., (e).
- 322. Ibid., (g).
- 323. Ibid., 8-1416(b).
- 324. Ibid., (d).
- 325. Laurel, Maryland City Code 20-235(e)(4) (1972).
- 326. Ibid.
- 327. Ibid., (a).
- 328. Ibid., (b).
- 329. Colo. Rev. Stat. Art. 2, 115-2-1. (1963).
- 330. Ibid., Art. 1, XXV.
- 331. Colo. Const. Art. XXV.
- 332. City of Lamar v. Town of Wiley, 80 C. 18, 248 P. 1009 (1926); Town of Halyoke v. Smith 75 C. 286, 226 P. 158 (1924); City of Colorado Springs v. P.U.C. 126 C. 265, 248 P. 2d 311 (1952); Greeley Transportation Co. v. People, 79 C. 307, 245 P. 720 (1926).
- 333. City of Englewood v. Denver, 123 C. 290, 229, p.2d 667 (1951).
- 334. Colo. Rev. Stat. Art 3, 115-3-1 (2) (1963).
- 335. Ibid., Art. 4, 115-4-1.
- 336. Ibid., 115-4-2.
- 337. Ibid.
- 338. Ibid., Art. 5, 115-5-2.
- 339. Ibid., 115-5-3.
- 340. Ibid., 115-5-5.
- 341. Ibid.

- 342. Ibid., Art. 6, 115-6-15.
- 343. Colo. Const. Art. XX.
- 344. Denver v. Mountain States Telephone and Telegraph Co., 67 C. 225, 184 p. 604 (1919) (overruled as to telephone rates by Public Utilities Comm. v. Mountain States Tele. and Telegraph Co. 125 C. 167, 243 P.2d 397 (1952)).
- 345. Telephone interview with City Attorney, December 4, 1974.
- 346. Aurora, Colorado City Code, Chapter 5, Utility Rates (1974).
- 347. Ibid.
- 348. Ibid.